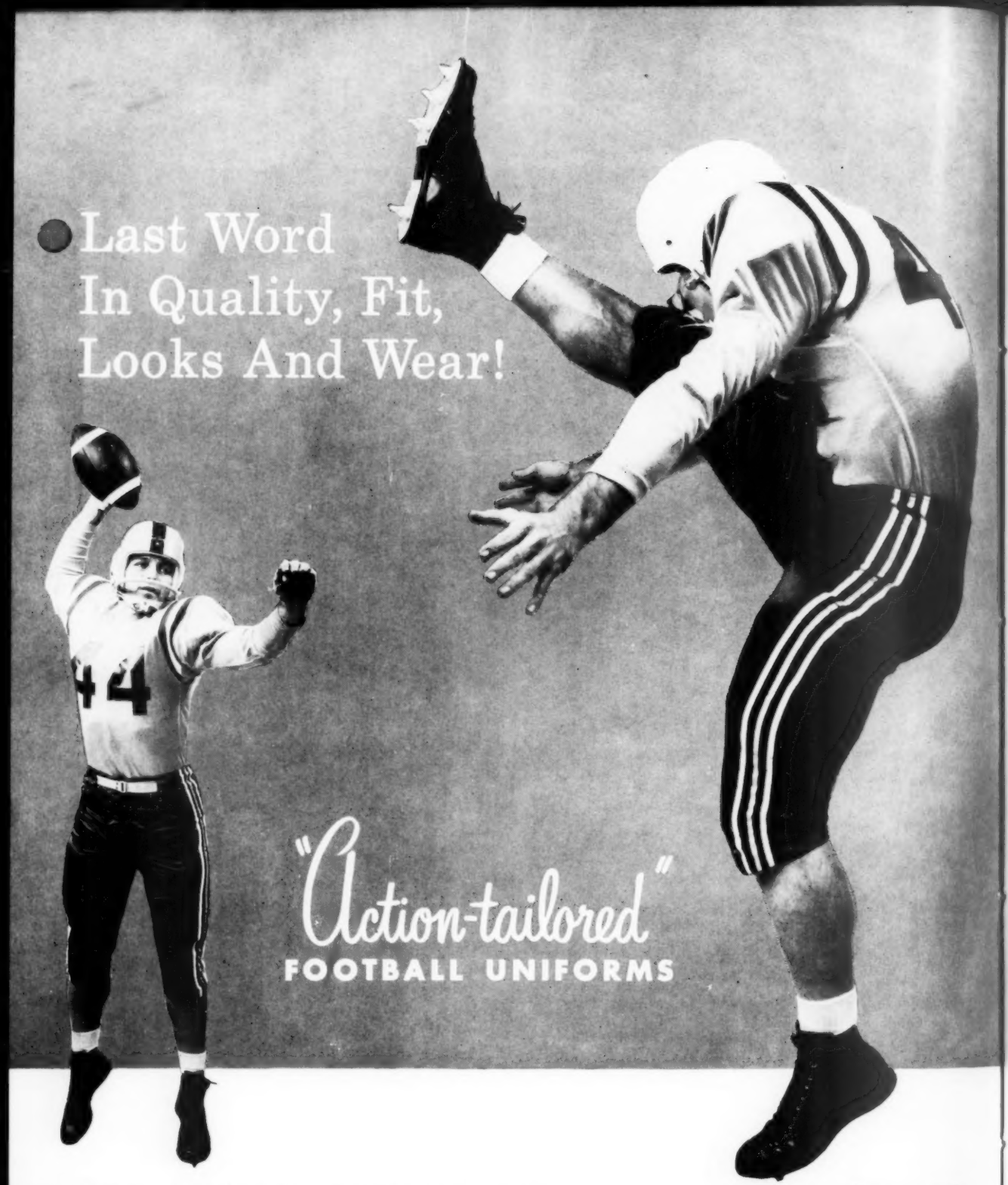
ATHLETIC JOURNAL

VOL. XXXVIII No. 7 March, 1957

FOR A BANNER YEAR

ORDER EARLY

1. Get delivery ahead of deadline.
2. Receive the exact equipment ordered, without substitution.
3. Get equipment carefully produced by unhurried craftsmen.
4. Have time to adjust sizes, and re-order for new men on the squad.
5. Have time to mark equipment . . . assign it to individual players . . . and have it ready for the first day of practice.



Gridiron clothing distinctively designed by Rawlings for the maximum in fit and comfort and to withstand the rugged demands of modern football.

These colorful, lightweight pants and jerseys are constructed of the finest fabrics and yarns ever developed for football clothing.

No finer football clothing is made than Rawlings "Action-Tailored" Uniforms. *Order early* to have your team outfitted correctly and on time!

Rawlings®

"The Finest In The Field!"

RAWLINGS SPORTING GOODS CO.
ST. LOUIS • LOS ANGELES • DALLAS • CHICAGO

Thinking of *REFINISHING* or *REMARKING* your gym floor?

NEW!

Folder Also Tells How to Give Your Gym Floor TROPHY "Finish for Champions"

COACHES LIKE "TROPHY" FLOORS — for beautiful appearance which invites championship caliber play.

PLAYERS LIKE THEM — for sure-footed slip resistance.

SPECTATORS LIKE THEM — for no-glare, light color which helps them see plays clearly.

ADMINISTRATORS AND CUSTODIANS LIKE THEM — for extra long wear and ease of maintenance.

Now You Can Afford the Best! TROPHY outwears all other finishes by more than 2 to 1 — cuts labor in finishing and maintenance by one-half!

ST. JOSEPH, MO.

FLOOR HILLYARD TREATMENTS

San Jose, Calif. Passaic, N. J.
Branches in Principal Cities

REVISED HILLYARD FOLDER *Gives You Valuable Suggestions, Can Save You Expensive Unnecessary Work*

Complete instructions for laying out, marking, and finishing. It's up-to-date, with all rule changes, including new wide free throw lanes. Also gives lining instructions for other popular indoor sports. Every coach should have this Free Guide. If you're changing over to the wide lane, Hillyard can show you how to re-mark your court *without* re-finishing the entire floor!

MAIL THIS COUPON TODAY!

HILLYARD St. Joseph Mo.

☐ Please send me new Coach's Folder on Gym Floor finishing, layout and marking.

☐ Please have your nearby Hillyard "Maintaineer"®, trained floor expert, advise me the proper way to change my court over to new wide lane markings.

Name .....

Institution .....

Address .....

City ..... State .....

ATHLETIC JOURNAL

1719 Howard Street
Evanston, Illinois

Established in 1921 by
MAJOR JOHN L. GRIFFITH

JOHN L. GRIFFITH, *Publisher*
M. M. ARNS, *Editor*
DAVID J. EVANS, *Adv. Director*
HERB ARTELT, Jr., *Art Editor*

AUDITED PAID CIRCULATION ABC

Eastern Advertising Representative
Charles Thorp, 370 Lexington Avenue,
New York City

Subscription Prices:

Two dollars per year; $3.00 for two years; $3.75 for three years; Canada $2.50 per year; foreign $2.75 per year. Single copies 25 cents each for current volume; 35 cents each for back volumes. Copyright 1957.

Change of Address:

Request for change of address must reach us thirty days before the date of issue with which it is to take effect. Duplicate copies cannot be sent to replace those undelivered through failure to send advance notice. Published monthly except July and August. Member of the Audit Bureau of Circulations. Address all communications regarding circulation and manuscript to:

ATHLETIC JOURNAL PUBL. CO.
1719 HOWARD STREET
EVANSTON, ILLINOIS

Entered as second class matter at the post office at Evanston, Illinois, under the act of March 3, 1879; additional entry at Barrington, Illinois.

Volume XXXVII — Number 7

March, 1957

FRONT COVER ILLUSTRATION

Now is the time to plan equipment purchases for next year, and to bring this fact home forcefully we outlined several reasons. The rainbow effect is a new process in printing, and we are pleased to present it for the first time in our field.

A Look At This Issue and a Glance Ahead

WE ARE presenting a new approach to a technical article in Jim Leighton's analysis of the forehand stroke. In this article, the author has compiled numerous viewpoints, shown how they compare and how they differ, and which method he has found the most beneficial. With this issue the pendulum starts to swing toward football, and we offer three articles on that sport. The fourth "For Your Bulletin Board" feature appears this month and there are three other track articles and three baseball articles. Next month we are presenting Don Canham's article on the pole vault which was announced for this month, and several baseball and football articles. As this is being written, attention is being directed toward opening play in the state tournaments. We wish every team could win but, of course, this is impossible, so to the winners and losers alike, congratulations on a fine season and better luck next year.

Star of the "bowl" games...

The J5-V by Spalding!

—finest football ever made—with the "built-in", all-weather grip.

THE SUGAR BOWL . . . The Cotton Bowl . . . The Orange Bowl . . . The Sun Bowl . . . The Aluminum Bowl . . .

Spalding's nationally famous J5-V football was selected as the official ball for these important bowl games. Not surprising when you remember this is the finest football ever made—again the number one choice of schools and colleges across the nation.

The exclusive leather cover of the Spalding J5-V holds its pebbling and shape amazingly well under the roughest play. "Control-It" surfacing gives the J5-V the best "grip" in football in any kind of weather.

With spring practice so near, it's time to get in touch with your Spalding representative and stock up. He offers the J5-V along with a complete line of quality football equipment in every price range.

And don't forget—every product in the Spalding line is unconditionally guaranteed.

SPALDING sets the pace in sports

ACCORDING to studies conducted by the Wisconsin Interscholastic Athletic Association on injuries occurring during last fall's football season, the off-tackle play was the most dangerous play for the tackles, while the end run was the most dangerous for the ball-carrier. During the past football season Michigan high school teams made 4357 appearances before the public and of that total just under 60 per cent were at night. Night football is just about equally strong among A, B, and C classification schools. Only in the Detroit schools is there to be found any appreciable deviation from the state-wide average. In Detroit 14.5 per cent of the appearances were at night . . . There is a great deal of talk about coaching becoming more and more precarious as far as tenure is concerned. However, such is not the case. A study of eighteen major institutions shows that during the period of 1910-1919 each school had an average of 4.3 head coaches. During the next decade this figure dropped to 3.4. In the '30's the average was 2.9, and during the '40's the average was 3.1. During the first seven years of this decade the average was 2 per school. If each school employed one new coach during the next three years, the average would be practically the same as it was in both the '30's and the '40's . . . We believe we are safe in saying that when the football coach handles another sport, more often than not it is track. We also believe it is safe to say that the track coach more than the coach of any other activity is called upon to fill noncoaching spots in the athletic department. Among the college track coaches who also serve as trainers are the following: Al Coulthard, Brandeis; "Ducky" Drake, U.C.L.A.; Lyle Bennett, Central Michigan; Robert Haney, DePauw; Bob Chambers, Duke; Gene Long, Hamilton; Bart Sullivan, Holy Cross; Larry Green, Hope; A. D. Dickinson, Iowa Teachers; Glen Gerdes, St. Cloud, Minn., Teachers; C. R. Bickerstaff, N. Mex. A.&M.; H. B. Goodell, S. Dak. School of Mines; Stanley Wright, Texas Southern; Charlie Thomas, East Texas; Delmar Brown, Texas Tech; Ross Moore, Texas Western; Herb Bee, Western Reserve; William Martin, Whitman; Guilford Joyner, William and Mary; Willard Webster, Youngstown; and Ted Owens, Connecticut Teachers College. In addition, there are 28 other track coaches who are either the athletic director or assistant at their institutions. Three are business managers and 11 are in charge of the physical education program. There are nine who direct their school's intramural program and two who handle the sports publicity. The latter two are Edward Russell at Brooklyn Polytechnic and Wiles Hallock at Wyoming.

* * *

LAST month in this column we asked if any six-man team ever went through a season without being scored upon. C. J. O'Connor, publisher of the *Six-Man Football Magazine*, advised us that Hamden Hall Country Day School in Connecticut went through a nine-game schedule in 1953 without letting the opposition score a point. Any others? . . . The University of North Carolina basketball team recently adopted traveling suits of gray flannel trousers, blue sport coats, white shirts, and blue and white striped ties. This idea of traveling suits is an excellent public relations gesture and one that other schools might adopt. A number of college teams are now identifying themselves in this manner . . . Our heartiest congratulations to the Hillyard Chemical Company who this year is celebrating its fiftieth anniversary by dedicating a new six-story ultra-modern office building . . . It is with a great deal of sadness that we announce the death of Harry Gill who was track coach at Illinois from 1904 through 1933. His coaching record showed 111 dual meet victories, two ties, and but 24 losses . . . Bob Devaney, Wyoming's new football coach, is the ninth Michigan State assistant to move up to a head coach-

(Concluded on page 55)

Spot-Bilt shoes are used by more universities, colleges and high schools than any others in the field

Spot-Bilt baseball shoes

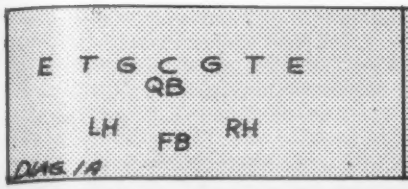
The No. 1 name in scholastic footwear

SPOT BILT

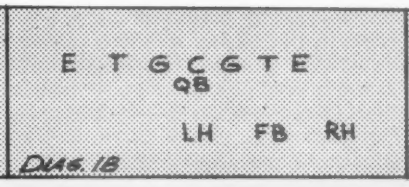
presenting America's top-selling model in KANGAROO

Model 222 is the biggest-selling kangaroo baseball shoe in America's No. 1 scholastic line. Goodyear Welt constructed, using the mellowest athletic-tanned Blue Back Kangaroo uppers, it is DuPont Nylon stitched for maximum strength. The straight leather outersoles are retanned with Spot-Bilt's exclusive Hydol leather conditioner which preserves the fibres so that they never harden, curl, crack, or rot — thus adding longer life, strength, and flexibility to the shoes. Richardson's Major League two-piece cleats complete a shoe of outstanding excellence.

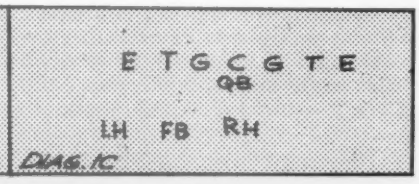
SPOT BILT, 160 MUNROE STREET, CAMBRIDGE, MASS.



DIAG. 1A

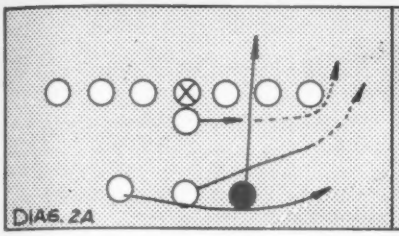


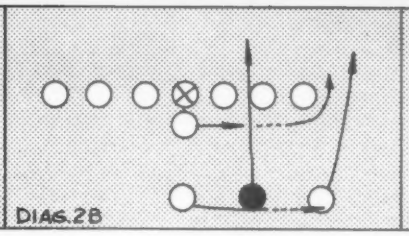
DIAG. 1B

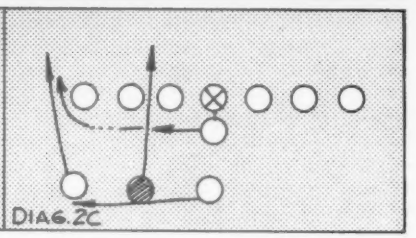


DIAG. 1C

The Split T Slide Series


DIAG. 2A


DIAG. 2B


DIAG. 2C

WE became proponents of the split T formation several years ago and have experienced considerable success with this popular formation. Realizing that our opponents would undoubtedly encounter this offense several times during the season, due to its popularity, we set our sights on developing a possible offshoot of the split T.

Through the years we have sought variety, yet simplicity in our football offense. After considering the problem for some time, we struck upon what we call our slide series. The basic principle of this series is running the regular split T series with the backs moving over one position to the right or to the left. Diagrams 1A, 1B, and 1C show the regular formation, the slide right formation, and the slide left formation.

In the normal formation the halfbacks are directly behind the tackles. In the slide right formation, the left halfback is in the fullback's position, the fullback is in the right halfback's position, and the right halfback is about one yard outside the right end. The opposite is true in the slide left formation.

To support our theory of simplicity, we were not required to change the line blocking assignments. Doubling the number of plays with no change in line assignments is always a pleasure to the beleagured lineman, who must face a multitude of defenses as it is.

ANDREW GRIEVE has been a frequent and welcome contributor to these pages, having authored articles on six-man football, basketball, and eleven-man football. His coaching career began at Wellsburg High School in upper New York. Subsequently he coached at Van Etten, New York, and Wyalusing, Pennsylvania, before accepting his present position last summer.

We do not believe there is any necessity of going into the intricacies of the split T formation because volumes have already been written on this subject. In the main, the principles applicable to the split T apply to this slide series.

Diagram 2A shows the dive play as it is run from the regular split T series. Diagrams 2B and 2C show the same play as it is run from the slide right and slide left series. The only variation is the slight change for the on-side halfback. In the slide series he is required to carry out the assignment of the fullback while the fullback is diving. As the fullback in the straight split T series, the halfback will run through the defensive end's position and get downfield for a block.

In Diagrams 3A, 3B, and 3C we see the option play as it is run from the straight split T, the slide right, and the slide left. The on-side halfback again switches assignments with the fullback, as he goes over the end's position and the fullback dives. The option depends upon the quarterback as it does in the regular option play. Since the off-side halfback does not have as much distance to make up, he may take less time to reach the pitch-out spot. We found this to be no particular problem after considerable practice in regulating the speed of the off-side halfback.

To replace the fullback slant off-tackle, we again have the on-side halfback and the fullback switch assignments. The fullback dives, the quarterback slants back to meet the on-side halfback, who has hesitated slightly, and the on-side halfback slants through the off-tackle hole. The off-side halfback is responsible for the defensive end in this play and will help screen the ball exchange as he cuts in front of the hand-off spot. Diagrams 4A, 4B, and 4C show the three variations.

The counter play, as shown in Diagrams 5A, 5B, and 5C, develops as it does in the regular split T attack. However, in the slide series the off-side halfback becomes the ball-carrier. The fullback dives, and after the fake to the fullback, the quarter-

(Continued on page 48)

BY ANDREW W. GRIEVE
Football Coach, Sherburne, New York, Central School

Batting Styles

THE inspirational values received by the young people of our country from professional baseball players are inestimable. The batting styles of these players capture the fancy of our youth, particularly when they belong to successful players. Batting averages are memorized daily, and batting styles are copied down to the last detailed movement by young baseball players. Yet the wisdom of copying batting styles is highly questionable.

We have seen many youngsters, inspired by the success of baseball luminaries, copy their total batting style in appearance. Just this past season one youngster who had fairly good ability copied Stan Musial's style. No one would dare contradict the fact that this style has been successful for Musial. But it certainly was not successful for this young hopeful. He did not appear natural when he was using Musial's style, and it did not fit his batting ability. His batting average suffered, and he became confused because he was not hitting well while using a successful style, that is, successful for Stan Musial. This lad was allowing his admiration for Stan Musial to interfere with his own natural batting ability. He was confusing inspiration with aspiration. Apparently he felt that batting the way Musial does would lead to success. Actually, the inspirational factor should have led him to practice and work at batting in order to utilize his own natural batting ability to the best advantage.

Too many youngsters tend to adopt the unusual batting style as the appealing one. Young players desire recognition and they want to be rugged individualists. They have initiative and want to show it. As a result, they are apt to be attracted to something different as appealing in a batting style. This difference is often interpreted as being good since it is attractively different.

Furthermore, people like to be identified with successful individuals, and what better way is there to achieve this end than to copy some successful player's batting actions. This idea, of course, is a fallacy, since batting styles in order to be copied effectively must be understood. The most important fact in considering the adoption of a batting style is the knowledge of why that batter is using a certain style. Most batters use a particular style because it makes the most of their natural batting ability.

Others use a certain style to hide or modify a weakness. For example, some batters bend over considerably while in their batting stance in order to cut down the size of the high inside strike zone. They also make it more difficult for the opposing pitcher to pitch to that strike area for fear of hitting the batter with a pitched ball.

Some batters hit with the front foot close to the plate in order to modify the weakness of pulling that foot away on the curve ball. This is an individual technique which must be interpreted in the light of a batter's physical ability and his batting thoughts.

Occasionally, batters change their batting style temporarily. This happens when they are having difficulty hitting a particular pitch. As soon as this temporary drawback or weakness is corrected, they gradually go back to their own natural batting style.

A few batters hit differently against different types of pitches. Thus, their batting style is temporarily changed because it is planned that way. Then the onlooker who is not informed is apt to use a style which is being used on a temporary basis. Furthermore, it is being used for a specific purpose, and only for a short time. Thus, the young player who copies this style is copying a temporary style on a more or less permanent basis. He is also copying a style that is being used for a limited purpose for his own all-purpose use.

Every batting style should be created in terms of the physical, mental, psychological, and emotional make-up of the individual who is using it. Consideration must be given to these factors in order to fit the batting style to the particular batter's temperament and physical characteristics. These factors should also be a basis for correction of batting faults which, of course, modify the batting style.

Players are apt to change or modify their batting styles to fit their changing needs. As professional players grow older, their muscular reaction speed becomes slower, and they have to modify their batting style. Players like Pee Wee Reese and George Kell now stand a bit farther away from the plate and hit to right field quite often. They also hit and run frequently. These players are also more apt to move around in the batter's box to hide their batting intentions, and also to confuse the opposition.

Some players bend over the plate more as they grow older. They feel that they see the ball better, protect the plate more, with the result that they strike out less frequently.

These two differences in batting styles under similar circumstances of slower reaction time due to age indicate that the batting style is the result of a batter's physical characteristics plus his thinking activity. *Batting styles do not create ability. They are the result of ability.*

Physical size and strength are important in adopting a batting style. Size and strength should influence the selection of a long ball style, a modified free swing style or a *punch* or *choke* style of batting.

The youngster who matures early physically and has good shoulder and arm strength is more apt to swing the bat with greater ease. Furthermore, he has the basic physical strength to hit the ball farther.

Wrist strength and wrist speed are important. Speed of swing is of the utmost importance. This speed is often described in terms of *quick wrists* or *lively wrists* as opposed to *lazy wrists*. Batters like Ernie Banks, Ted Williams, and Stan Musial possess them. Copying the style of hitting used by these players without possessing this qualification is a futile mimicry.

Speed of reaction is also an important factor. In order to hit the oncoming pitch successfully, a batter must have quick muscular reactions. Quick reaction speed often allows a fuller swing. It is a factor in successful long ball hitting.

The extent of muscular coordination has a distinct bearing on batting style. The better or finer the muscular coordination, the more accurate and better the timing. Timing is one of the prime factors in successful hitting. Therefore, timing (eye muscle coordination) is an important factor in determining a batting style.

Good eyesight is probably the most important asset in batting. We believe that all great hitters possess bet-

s—Facts and Fallacies

ter than average vision. Great hitters like the immortal Babe Ruth, Paul Waner, former Pittsburgh great, Ted Williams, Mickey Mantle, and Ernie Banks possess eyesight of considerably greater visual acuity than normal. They see the pitch earlier in its oncoming flight, and they see it more clearly. Thus, they can step back and swing harder at the oncoming pitched ball.

In professional baseball the size of the playing field occasionally has an influence on the batting style used in that park. For a number of years the New York Giants tried to teach their farm team players to pull the ball close to the foul lines so that when they were promoted to the parent club they could take advantage of the short distances along those lines in the Polo Grounds in New York. Stan Hack, former Chicago Cubs player, once told us that he used the same batting style in every National League park except one. In this one park he changed his style to pull the ball more due to the short right field fence.

The classification or level of baseball being played has a relationship to the extent of success that may result from copying batting styles. The younger and less experienced the boy, the slimmer the chance of acquiring benefits from copying styles used by professional players. Batting styles used by successful players are the result of years of experience, knowledge, and experiment. They have grown from *within* the particular players who use those styles. Copying them without knowing the trials and tribulations from which they emerged is like trying to act as a millionaire without money.

Should a young player uppercut and go for the long ball like Ted Williams? Does he have the physical power of Mickey Mantle? Can he peek around the corner at the pitcher and still hit as Stan Musial does? The answers to these questions lie in a serious study of these batting styles in order to learn their inception and intent.

We remember, as a youngster, hearing a few former professional players say: "Pick out some major league player you like and then copy his style." As a matter of fact, this statement was made just recently by a former major leaguer who is now a scout. To our way of thinking, this idea seems to be the easy way out. It is a short-cut answer to evade a deeper issue, that of studying one's self and one's ability — that of combining one's own natural resources with hard work in order to increase the production of base hits. Production cannot be copied; it must be created. Perhaps it has never occurred to this present-day scout that no two players react exactly alike physically, mentally or emotionally.

Individual differences form a vital part of the structure of our great national game. The tact that the individual may form his own batting style, that he has unlimited creative opportunities, and that professional baseball is basically open to individual enterprise is of utmost importance in considering batting styles. This type of thinking and reasoning creates a liberal attitude concerning batting styles, and encourages individuality in them. It opposes the stereotyped narrow thinking of copying others as a short cut to success, and preserves the spirit of experimentation. This type of thinking encourages the creative abilities of youngsters to improve on their own batting styles rather than copy from others.

A hypothetical question once asked of Ted Williams, one of the great hitters of all time, is as follows: "If it were possible to create a player of exact physical likeness and proportion would that person be able to hit as you do?" The answer was, "No, because he would not think as I do." Furthermore, he would not react emotionally the same as Ted Williams does. The call of a ball or strike, the remarks of a catcher, and the jockeying from the bench all create emotional reaction. This reaction has a direct influence on batting. From a physical standpoint, visual acuity, body strength, speed of reaction, and muscular coordination are factors which vary in quality and extent. They cannot be duplicated to an exact degree. When influenced or modified by mental and emotional processes, it becomes obvious that copying a batting style in its exact form will avail little or nothing in the way of the same results. Since there are differences, no two batting styles can be exactly alike, nor can an attempt at copying an exact style produce the same batting average.

An Intelligent Approach

Parts of styles may be adapted and adopted when they are wisely selected and sagaciously used. The parts to be adopted should be studied before selection in order to insure the greatest chance of success. Each part of a style should be isolated and studied on an individual basis. The part to be adopted should fit naturally into the individual's batting style. It should be a natural addition, one that is easily adaptable to and integrates with the individual's natural batting style.

The parts of a style which are to be added should be practiced on a tryout basis first. The individual should get the feel of each adopted part by concentrating on its operation and synchronization with his basic natural style. This work should be done in practice sessions. The player should acquire a sensitivity to and confidence in the potential effectiveness of each new additional part.

Parts of styles must contribute to the success of the individual's batting style or be eliminated. If, after a reasonable tryout, the additions to the natural batting style do not lead to improvement they should be discontinued and a further intensive study made to correct this deficiency.

Parts of styles may be adopted when they are based on the facts of individual improvement, and not on individual fancy. The purpose of acquiring new parts is to improve performance. Anyone can be a fancy batter; only a few are good hitters.

The additional parts selected must fit the individual's mental activity and thinking phases of batting. They must fit smoothly and easily into the player's thinking pattern in order to coordinate physical activity with the mental batting processes.

A player should study the basic ele-

(Continued on page 60)

BY JAMES SMILGOFF
Baseball Coach, Taft High School, Chicago, Illinois

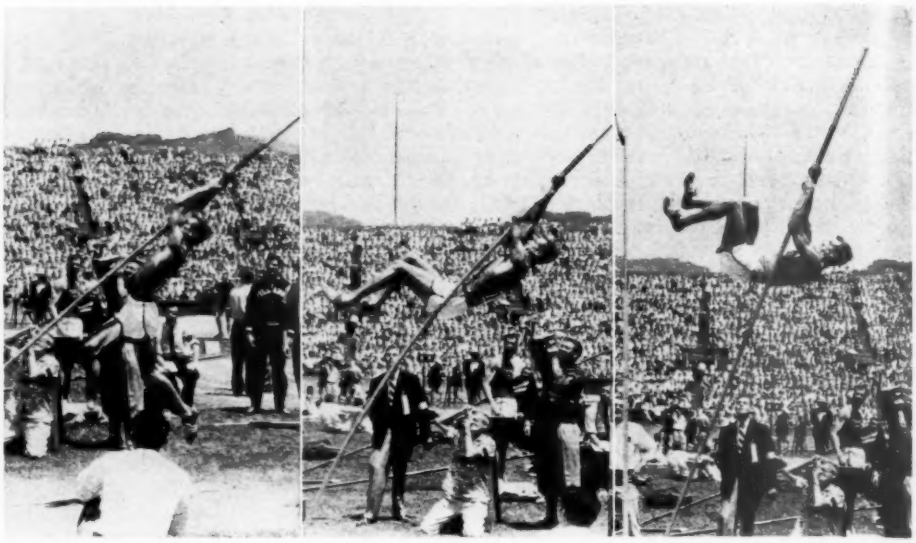
Bob Gutowski

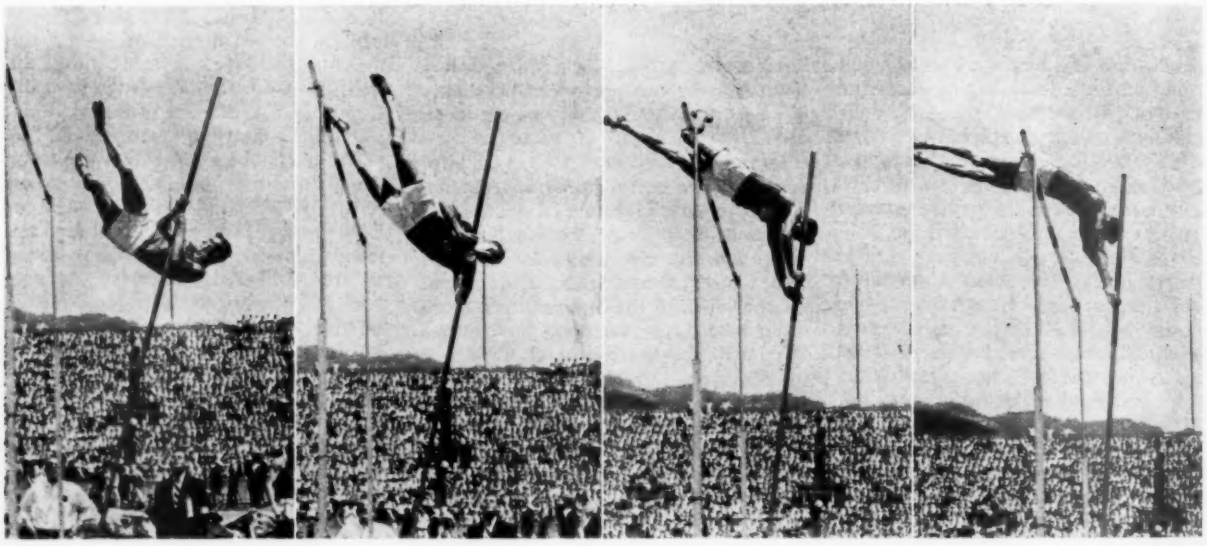
(Occidental College)

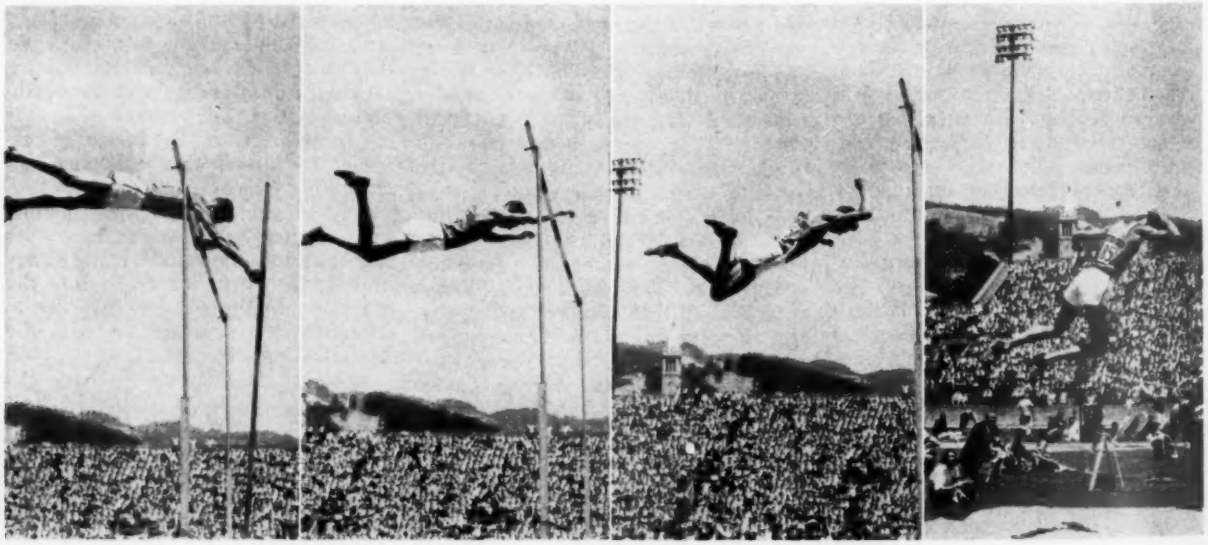
America's Newest 15 Footer

Best height 15'6"

Photos taken at NCAA Meet, 1956







Teaching Starting

BY RICHARD CALISCH
Cross-Country Coach, Maine Twp. High School, Des Plaines, Illinois
and
LESTER C. WALLACK, JR.
Freshman Track Coach, Colgate University

JUST how long is a sprint? It may be anywhere from 50 to 220 yards. These days the 440 is even being considered by many coaches as a sprint. Whatever the distance may be, most coaches agree that a good start is the most important single phase of a sprint race. In a straight-away event, an early lead will often give a runner who is equally matched the psychological edge he needs to win. In the events run around a turn, the fastest starter usually ends up with a good position on the pole. In any case, a fast, explosive start never hurt any runner, good or bad. The essentials of good starting are of utmost importance to the beginning sprinter, for even if he has a great deal of natural speed, some day he will have to learn one of the generally accepted methods of getting off the blocks or he will find himself defeated regularly by boys of his own or lesser ability. Remember, if two boys are of equal ability, as a rule, the better coached runner breasts the tape at the end of the race.

A simple and sound method of teaching starts is an essential part of the coach's repertoire. Constant practice and supervision are musts in order to perfect the movement and eliminate bad habits which can mar smoothness, balance, and rhythm. How, then, should the coach teach his recruits the fundamentals of that complicated art, starting?

To begin, starting is a mid-season skill. It should not be neglected until the week before the first meet. However, it should not be started until the boys are in some sort of basic condition. The explosive nature of the start can pull untrained muscles. A good warm-up is also essential to a workout in the blocks. When the coach feels that his students are ready, he should bring them to the track, place them on a starting line, and have one of the more experienced boys demonstrate the crouch start several times for the newcomers. Do not use a gun or a vocal command. Let the boys watch the movement without these distractions.

After the demonstration, when the boys have an idea of what they are to do, place them behind the line. Hand and foot placement is the logical beginning because it is the basis for relaxation and the eventual explosive drive that is the aim of the crouch start. The beginning sprinter should place his hands down just behind the starting line with his fingers parallel to the line and pointing away from his body. His thumbs should be turned in toward each other, and his fingers kept close together. Later, when his weight comes forward, his fingers and thumbs will support much of his body weight, so finger exercises are a good idea early in the season. The runner's arms should drop approximately straight down from his shoulders, and his hands should be placed at shoulder width, elbows straight. It does not matter which knee is the forward one. The sprinter will put forward the one which feels the most natural to him. Leave it that way.

The sprinter's back foot should be not much more than 30 inches behind the starting line, allowing for his size and leg length. This placement enables him to derive enough leverage out of his rear leg and yet not send his hips too high in the *get set* position. His rear leg must whip forward at the gun reaction and cannot be bent too severely if this whip is to be accomplished. The average sprinter will place his front foot some 14 to 20 inches ahead of his rear one. The forward leg supplies the initial drive of his body from the blocks. It is the uncoiling of this leg which actually propels the sprinter's weight from the immobile position.

When the boys are in a fairly comfortable and correct position the coach should check to see that this weight is evenly distributed over all points which rest on the ground – the hands, the lead toe, the rear knee, and the rear toe. The sprinter's head should be raised and his eyes directed toward a point 10 to 20 yards ahead. This is the *on your mark* position. The coach should mark the position of the toes of each foot and have his runners practice getting into position. At this point, if he desires, the coach can introduce the boys to starting blocks. The blocks should be placed so they are two to three inches to the rear of the marks on the track. Each block will be at about 45 degrees to the vertical. As the sprinter gains experience, they can be raised or lowered to suit his taste.

The important thing to remember in placing the feet is to secure a sound starting position and yet have the boy reasonably relaxed. This phase will call for some minor compromises in most cases, because even the champions use many variations of the outlined foot placement method. However, the experienced sprinters have two things in common. They are relaxed, and they are usually off the mark fast. When the boys have foot placement mastered, the coach should explain to them that, at the command *on your marks,* the sprinter should have tested his position and be ready to get into the blocks immediately in preparation for the next command. This movement should be executed quickly but not hurriedly. They should place their hands and feet and lean their weight evenly on all supporting points. The sprinter's body should be poised and relaxed as well as alert, waiting, and geared for the next command. State of mind is of

AFTER competing at Illinois during the 1950, '51, and '52 seasons, Dick Calisch assisted at Maryland before entering the marine corps. During his service he was co-coach of the Camp Lejeune team. He accepted his present position as cross-country and assistant track coach last summer.

Les Wallack was the other coach of the Lejeune team, and this article was prepared during their service at Lejeune. Wallack was appointed assistant track coach at Colgate after finishing his tour of duty.

utmost importance here because all thoughts should be directed straight ahead, concentrating on an explosive action forward.

When the boys understand these points and can step into the blocks easily and wait relaxed, the coach should go on to the *get set* position. At *get set,* the sprinter's weight comes up and forward, extending his rear leg almost completely and bringing his hips up to or just above shoulder height. It is important that his body be sent forward as well as up, for the center of gravity should be as far forward as possible without loss of balance. In the *get set* position the sprinter's shoulders should be well forward of his hands, and his hips should be even with or slightly higher than his shoulders. Elevating the hips a great deal will tend only to straighten his legs and take much of the punch out of the start. Of course, his arms are straight, taking most of the body weight. Now his body is poised for an explosive movement forward, and all of his senses are geared to just one thing, the sound of the gun.

The coach should explain this procedure to his boys. Allow them to watch an experienced runner go through the motions slowly. Put them on the starting line and have them go through the two phases. While correcting the faults of each boy the coach will probably find that certain faults predominate. These are listed below with the corrective measures which are necessary:

1. *Hips too high.* If the boy cannot seem to be comfortable with his hips at shoulder level, his blocks may be too close to his hands. Move both of his feet back several inches.

2. *Hips too low.* Move both feet closer to the line.

3. *Off balance forward.* The sprinter's shoulders probably extend too far ahead of his hands. The coach should point this out to the boy, and have him hold himself in the proper balanced position, taking more weight on his lead foot and less on his hands.

4. *Too far back in the blocks.* Have him raise his hips and/or bring them forward. Instruct him to put more weight on his hands.

5. *Rear leg is bent too much or is too straight.* Adjust the rear block.

6. *Most of the weight on the rear leg.* Adjust the front block until the sprinter's front leg takes more weight than his rear leg.

When the sprinter feels comfortable, and his weight is on his hands and front leg, he is poised and ready for the gun. Every faculty is geared for that explosive thrust.

At the report of the gun many things happen at once. If the boys have learned their lessons well thus far, they will not be in too much trouble now.

Assuming that the sprinter's right leg is the rear one, let us take a look at what actually happens at the gun reaction. His right leg propels itself forward, adding slightly to the initiation of momentum as it pushes against the block before it starts forward. Simultaneously, his left arm is shot forward and upward in an uppercut motion to help initiate drive and maintain balance. Then his right arm is whipped back as his right leg travels forward and it also contributes to the balance which is so important. The action is a greatly exaggerated walking action, right arm back, right leg forward; left leg forward, left arm back, etc. As the sprinter's left leg straightens, he has a tendency to stand up too quickly. The action of his left (forward) leg must be *forward* as well as up as it pushes off.

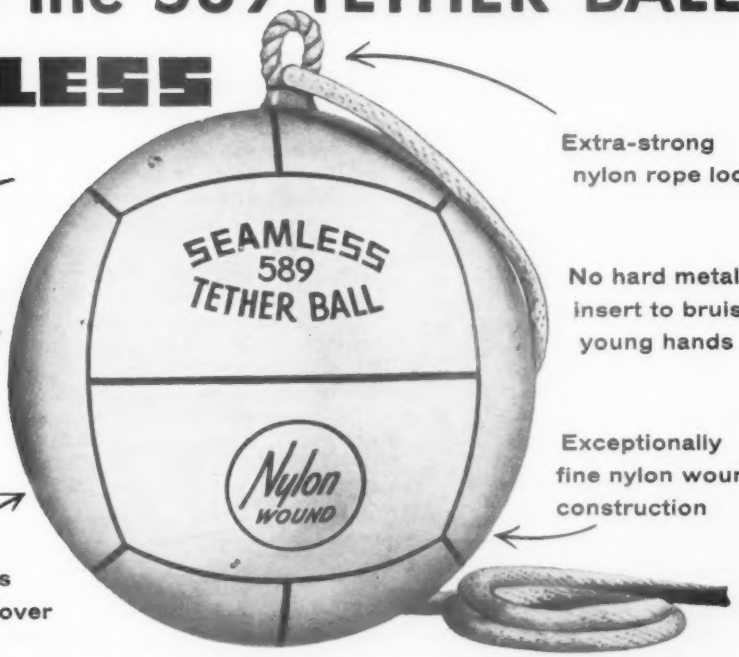
As the blocks are cleared, the sprinter's body is held low and the lean is maintained until full momentum is

(Concluded on page 64)

Put a lot of play on very little ground

Tether Ball gains in popularity every day on municipal and school playgrounds as well as in back yards across the country because it is crammed full of "play value," yet requires only a few square feet of space and the most modest investment in equipment. Invites plenty of healthful exercise. Install one or more Tether Ball games on your playground right away. You'll find the complete rules and regulations printed on the box of every Tether Ball by SEAMLESS.

Here's why the 589 TETHER BALL by SEAMLESS is Best for You



Extra-strong nylon rope loop

No hard metal insert to bruise young hands

Exceptionally fine nylon wound construction

Waterproof and scuff-proof

Soft, white chamois finish cover

See your Sporting Goods Supplier for full information, or write us direct

ATHLETIC GOODS DIVISION

THE SEAMLESS RUBBER COMPANY

NEW HAVEN 3, CONN., U.S.A.

Modern Shot Put Technique

By JACK WARNER

Track Coach, Colgate University

THIS is the last article in the series of three articles prepared for us by Mr. Warner. In the first article (January issue), the technique used by Parry O'Brien was discussed. The technique used by Bill Nieder was described in the second article (February issue). Mr. Warner presents his own views on the modern shot put technique in the following article.

The Initial Stance. It is essential that the shot putter's initial stance be one of relaxation and balance in order to obtain good coordination and timing in the shift. A right-handed putter points his right foot towards the rear of the ring 160 degrees from the direction of flight. This 160-degree foot placing rather than 180 degrees is best because it enables the putter to obtain a greater flexion of his spine laterally to the right. His body faces to the rear of the ring with his back turned to the direction of the put. The putter's shoulders and hips are in line. His body weight is centered over his right foot and is largely supported by the quadriceps muscle of his right leg. Then his left foot is approximately eight inches to the left of and 12 inches to the rear of his right foot. The toes of the athlete's left foot are in contact with the ground. His left leg and foot are relaxed and merely aid balance. Now his trunk is erect and relaxed, and the shot is in a position directly above the outer toes of his right foot.

He holds the shot in his right hand, as high in his fingers as their strength will permit. His thumb and little finger are used mainly for maintaining lateral support, while his first three fingers are placed behind the shot, with the distal end of the metacarpal bones directly behind the center of the weight of the shot and in a line 45 degrees from the horizontal, in order to offer maximum resistance against, and propulsion to, the shot.

We believe that the putter's right elbow should be abducted approximately 45 degrees in the frontal plane and flexed. This position keeps his forearm beneath the shot. His left arm is partially flexed and abducted approximately 120 degrees in the frontal plane. His left hand is at head height or slightly higher. The putter's head should be up to aid in body poise and balance. Relaxation is essential.

The Dip. This movement places the putter's body in position for the shift across the circle and starts with a forward and lateral flexion of the trunk over his right knee and foot. His left leg is partially flexed and raised up behind and his knee is pointing toward the ground. The sole of his left foot is up. At this point the putter's back should be in a position parallel to the ground.

His right leg flexes partially to maintain balance and to provide the impetus needed for the shift. At the start of the dip, the putter's body rises slightly on the ball of his right foot.

Now the athlete's left arm, which is still in a semi-flexed position, comes down and across in front of his shoulders. At the completion of the dip, his left forearm should be just in front of his right knee. This placement of his left arm serves to keep the line of his hips perpendicular to the direction of the throw. It also keeps his left shoulder down and in, and aids the athlete in maintaining lateral flexion of his spine to the right.

His right upper arm should remain perpendicular to the ground with his forearm beneath the shot.

Now the putter faces to the rear with his eyes focused on a point some 10 yards behind the circle. His trunk flexes lower over his right knee until his back is parallel to the ground. As the dip nears completion, the putter's left leg, still partially flexed, comes down and the toes of his left foot touch the surface of the ring at approximately the center of the circle. This movement maintains body balance just prior to the shift.

The Shift Across the Circle. The most important function of the shift is to produce acceleration across the circle; therefore, speed is of prime importance.

In starting the shift, the athlete brings his left knee forward approximately six inches and then kicks his left foot which should be rotated inward slightly to keep the kick straight across the circle and toward the center of the toeboard. The putter should stay low over his right leg during the shift. His left leg pulls his hips backward toward the toeboard and there should be a rapidly following drive off his right leg and foot. As his right leg is extended in the drive, the shift starts, and his right foot *drags* rapidly, but lightly, across the surface of the ring to approximately the center of the circle. Then the putter's right leg flexes partially, bringing his right foot to the center of the circle and to a point beneath his body's center of gravity. At this point, his foot is placed firmly at an angle of 45 degrees with the center line, and pointing toward the right rear of the ring.

His left leg should come down and his left foot should be against and parallel to the toeboard four to 10 inches to the left of the center line.

The putter's left arm should be kept across and in front of his shoulders throughout the shift. This position keeps the athlete in a closed position, preventing a premature rotation of his left foot and hip. His spine should remain flexed laterally to the right. His head and eyes remain in the same position.

The athlete's right arm and elbow should not change position in relation to his body. They should remain perpendicular to the ground.

It is the purpose of the shift to provide the initial speed for the putting action and to place the putter's body in a position from which this speed may be fused into his delivery.

His body must be in a low position in which it has the best mechanical advantage for delivering the shot. The athlete should be relaxed and ready to provide the *explosive* effort of the delivery which adds to the momentum given to the shot by the shift.

The Delivery. Immediately upon completion of the shift, delivery is started. There is no pause between the two. In the delivery the putter must attain the greatest possible velocity for the put, and he must push up and out to release the shot between 40 and 45 degrees. All power must be

(Continued on page 55)

Yours free... everything to organize a gold medal

HARVARD TABLE TENNIS TOURNAMENT

IN YOUR SCHOOL, PLANT OR RECREATION PROGRAM

FREE TOURNAMENT KIT . . . Get *all* the advantages of *full sports participation* with a Harvard Table Tennis Tournament. Just return the coupon below! Your FREE tournament kit is filled with everything required to run an exciting tournament. It contains two colorful Harvard Table Tennis Teachers with instructions and tips from champions; photos and diagrams of game-winning techniques; official U.S.T.T.A. rules and sections on leagues and tournaments. You also get 3 Harvard Tournament Charts, a complete tournament publicity program and a tally sheet which entitles you to valuable Harvard Gold Medals.

HARVARD GOLD MEDALS . . . Your men's and women's singles champions will prize these gleaming gold medals that are FREE with Award Certificates when you complete the tournament tally sheet. Mail the coupon below . . . today!

Harvard **TABLE TENNIS EQUIPMENT OF CHAMPIONS**

HARVARD TABLE TENNIS COMPANY
60 State St., Boston 9, Mass. (AJ-M)

Gentlemen:
In order to run a table tennis tournament please send us the FREE Harvard Tournament Kit.

SCHOOL OR ORG._____
NAME_____
POSITION_____
STREET & NO._____
CITY_____ZONE____STATE_____

We plan to start our tournament on_____ (DAY, MONTH, YEAR)
There will be approximately_____ (NUMBER) participants.
We do____, do not____ (CHECK ONE) offer table tennis all year.
Table Tennis is part of our athletic____, recreation____ (CHECK ONE) program.
There are approximately_____ (NUMBER) in our school or organization.

Part 2

Teaching the Crawl Stroke

BY JACK RYAN
Swimming Coach, University of Florida

Last month in Part 1 of this two-part article, Mr. Ryan discussed the leg kick, kicking and breathing, and the arm stroke. In this article, the author combines the movements and describes the coordinated stroke.

WHEN a swimmer has determined on which side he wants to breathe, learning the arm stroke, plus breathing, will not be difficult. It is important for the swimmer to make his own selection because he will usually choose the side which is most natural for him. The teacher or coach may wish to change the side at a later time in order to improve the swimmer's crawl, but for the learning process it is more practical to have the swimmer make the choice. This choice should be made when the swimmer is learning kicking and breathing so that the side he wishes to breathe from is fairly well established by the time he is ready for stroking and breathing.

Let us assume that our swimmer has elected to turn his head to the left, and we want to explain to him the exact time he is to turn his head in relation to the arm stroke. For this purpose we like to have him time his breathing and head turn with his right arm. When his right hand is at the point of entry, both the exhalation and the turn of his head are started. As his right hand reaches forward under the water, his head continues its turn and the air is completely expelled. When his right hand starts its downward press, inhalation is started and the opposite arm starts its recovery over the top of the water. As his right arm begins its backward pull, his head is turned back to center and his face is submerged. While his right arm completes its pull, the swimmer's head is held perfectly still and continues to hold this position as his left arm pulls and his right arm recovers.

During this phase of the arm stroke we like to have the swimmer hold his breath until his right arm is about to enter the water again, rather than try the continual process of inhaling and exhaling. By holding his breath the swimmer has increased buoyancy and, therefore, the position of his body in the water is much higher. A swimmer who prefers turning his head to the right to breathe can establish his breathing point by timing the turn of his head with his left arm. As his left arm is entering the water, his head is turned to the side.

We have had success with this method of timing breathing and arm stroke and it seems to be accomplished easily. The main value of this timing is that the swimmer is given a definite point on which to concentrate and at a convenient time in relation to the arm stroke.

In attempting to learn this type of timing it is best to start the swimmer in water that is waist deep. His legs should be spread apart and his body bent at the waist. When he is in this position, the swimmer can concentrate on his arm action and breathing without experiencing any discomfort. Any failures can be readily corrected without his having to tread water or get his body back to the horizontal plane. Further drills in a horizontal position are, of course, necessary and often it is wise to have the swimmer breathe on every fourth stroke in order to give him the advantage of more time to think of the proper movement and timing. When he feels he has the proper timing between his arms and head turn, he should begin breathing on every complete revolution of his arms.

These drills are best performed without the use of the leg kick so that full concentration can be focused on the arms. They are most useful in practicing the pull and increasing its strength. As soon as the breathing and arm pull are started, there is a tendency on the part of many swimmers to fail to pull back on both arms. Usually, most swimmers will pull back on one arm more than the other, resulting in an uneven and lopsided pull. The coach should watch his swimmers carefully since he wants the distance that each arm pulls to be identical.

Another point which must be watched is the tendency on the part of a swimmer to cut his head return short as he turns his face back into the water. As a result of this action, the forward reach of his arm is restricted and the arm is placed in the water wide of his shoulder. The swimmer should be instructed to turn his head all the way to the midline of his body. We tell each one of our swimmers to be certain that his breast bone and nose form a straight line when his face is back in the water.

The Coordinated Stroke

The most difficult part of the crawl stroke is learning the coordination. Mastering the various parts of the stroke is not too difficult a task, but attempting to synchronize the whole stroke into one smooth pattern becomes quite a problem. It is useless for a coach to try to explain coordination by telling the swimmer that his left arm is pulling while his right leg is on the upward beat of the leg kick, or at what point his arm is doing one thing while his leg is doing another. It is impossible for the swimmer to concentrate on so many variables without becoming lost in a mass of details, and the coach cannot see all these actions in terms of making corrections as the errors occur. The coach will also find himself confused about what is actually happening.

It seems then that a simple method must be used in teaching coordination. In order to be able to analyze

(Continued on page 62)

The Important Point!

Top coaches and players know the value of sports equipment that never varies... that consistently performs to the same exacting official standards, in practice as well as official play, in game after game.

Each year, the Voit XB20 is used in more games at college, junior college and high school levels. In actual game play, it has proved itself to be equal to or better than other officially recognized game balls, and a wiser buy because of its longer life.

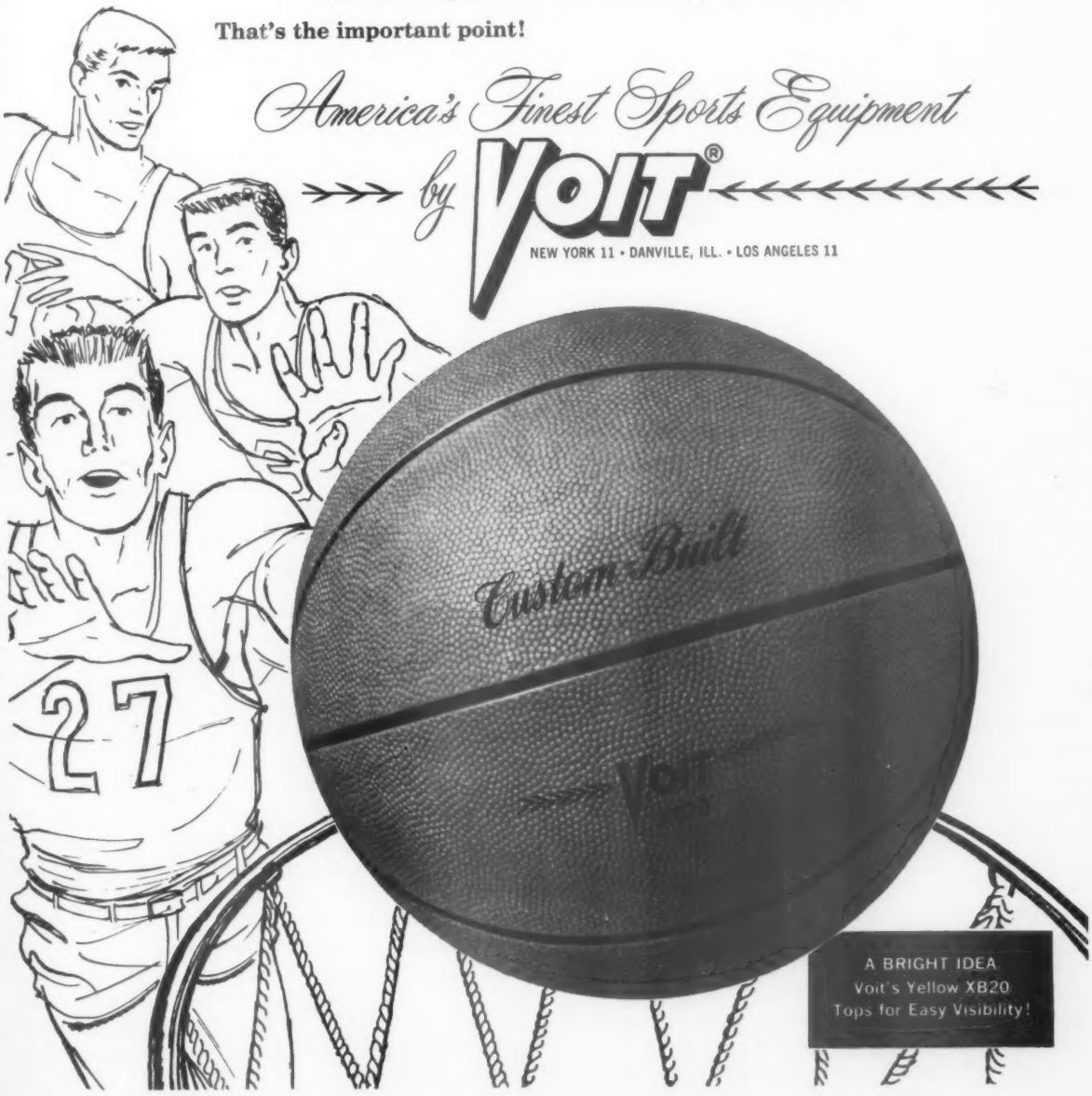
The Voit XB20 delivers an unmatched combination — consistent top performance and unequalled economy.

That's the important point!

America's Finest Sports Equipment

by **VOIT®**

NEW YORK 11 • DANVILLE, ILL. • LOS ANGELES 11



A BRIGHT IDEA
Voit's Yellow XB20
Tops for Easy Visibility!

ATHLETIC JOURNAL

America's First Coaching Magazine

Vol. XXXVII March, 1957 No. 7

Published by
THE ATHLETIC JOURNAL PUBLISHING CO.
1719 Howard Street
Evanston, Illinois

The Good Side of Athletics

ALL too frequently we see the evils and faults of athletics called to public attention. All too infrequently do we see the good in athletics discussed. We feel it is about time that the general public is given a taste of the sweet along with the bitter.

Ray Null, a former high school and college coach and more recently athletic director at Detroit University, is currently on the sports staff of radio station WHFB in Benton Harbor, Michigan. He concluded his sportscast of January 5 with a stirring plea for athletics. Joe Rogers, the director of athletics at Benton Harbor High School, thought so much of Null's remarks that he sent us a transcript. We quite agree that this is the type of affirmative thinking which is needed in regard to athletics. Mr. Null's remarks follow:

"Many of us today listened to the grave address to Congress delivered by Dwight Eisenhower, the president of the United States, in which he asked its permission to use American troops to curb any armed aggression in the Middle East.

"Made us stop and think, didn't it?

"Many people often question the value of athletics — many people question professional athletics — the purity code — injuries — and the overall contribution of athletics to the American way of life.

"Let me assure you that no part of our educational curriculum contributes more to the seven cardinal principles of education than physical education.

"A young man's ability to think and act under pressure — his contribution to a cooperative team effort — cannot be found in a textbook or in the classroom. The ability to adjust to adverse conditions — to react to a victory or a loss — the value of conditioning and physical fitness — the importance of self-sacrifice to obtain definite objectives and goals — leadership and the ability to react with sound leadership and decision under stress — all this is physical education and competitive athletics' contribution to the development and education of our young Americans.

"Granted that all branches of learning and education contribute to our national safety — for example: our chemists — our engineers — our doctors — our dentists — our men of industry — all are important members of the American team. But where can our young men better learn the value of team contribution than in athletics?

"Yes, sports fans, as our great president addressed the nation over this radio station and many other networks this January afternoon, I thought that in these trying days — when the blue chips are spread all over this great big world of ours — many, many of the leaders of the various branches of our fighting forces are American young men who on the gridiron, the hardwood court, the diamond, and the cinder path learned the true value of leadership, the value of organization, and the ability to think and act quickly under stress.

"It's a warm and nice feeling to know that the best in the world is a red-blooded young American who appreciates the value of athletics as an expression of the American way of life. If my youngster has to serve his country some day — that's his duty — that's fine — but I know one dad who hopes that his colonel or battalion leader called signals with calmness and integrity when thousands of sports fans' screaming voices stimulated rather than unnerved him. Let us, as good citizens, never lose track of the value of sports. It is indeed very true that today we cannot all participate in sports — but certainly we can all try to be one."

Better Turf—Fewer Injuries

RECENTLY over one hundred building and grounds superintendents, from high schools, colleges, and industry in the Chicago area met to organize the Midwest Grounds Management Association. The association will provide for an exchange of information on turf, tennis courts, etc.

There are similar organizations in other localities, and we feel that all of these associations are to be commended for their interest in athletic field turf.

The problem of reduction of athletic injuries has many facets, not the least of which is improved facilities. Outdoors this means well-turfed, rock-free athletic fields. The solution to this phase of the problem lies in experimentation and dissemination of knowledge of what constitutes good athletic field turf.

Wilson
T-SQUARE SHOULDER PADS
For PROTECTION...FREEDOM OF MOVEMENT

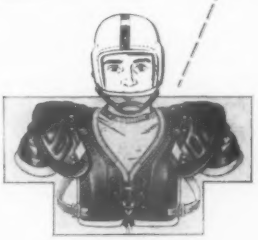
Wilson T-Square Shoulder Pads are designed for the defensive and offensive requirements of modern football...keeping pace with today's wide open style of play.

We call it the T-Square because in body contact it remains squarely in place. The fit is the secret!

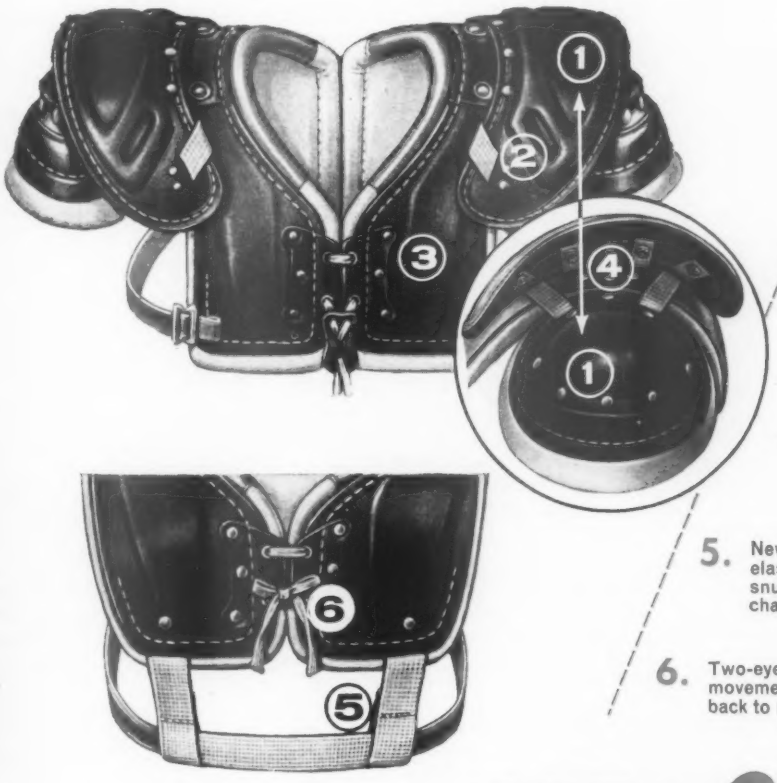
Teams can be fitted accurately in an extensive variety of models for professional, university and high school play. Sizes 38-56.

See for yourself why Wilson T-Square Shoulder Pads are the safest and best in modern football.

Call your Wilson representative.



Wilson T-Square Shoulder Pads will not raise or bind. The fit is the secret.



PROTECTION

FREEDOM OF MOVEMENT

1. Double shoulder caps distribute shock.
2. New epaulets are brought forward to ride smoothly on double shoulder caps and are padded with ¼-inch Ensolite.
3. Ensolite padding, most effective shock absorbing material ever developed, will not absorb moisture; pads are no heavier at end of game.
4. Web-locked epaulets eliminate epaulet sway—hold epaulets in proper position at all times without interfering with arm movement.
5. New style back extension straps position the elastic body strap which holds the pads snugly in place at all times. No underarm chafing!
6. Two-eyelet lacer allows pads to flex in a hinge movement without creeping upward. Pads draw back to normal when arms are at rest.

Win With Wilson

Wilson Sporting Goods Co., Chicago • New Chicago Headquarters at River Grove, Ill., a western suburb of Chicago • Fastest nationwide service from 32 branch offices. (A subsidiary of Wilson & Co., Inc.)

Arranging the Baseball Practice

Standard Practice Routine	
Loosening-Up Period	15 Min.
Batting Practice	60 Min.
Fielding of Position	10 Min.
Fundamentals of Play	20 Min.
Infield Practice	10 Min.
Running	5 Min.
(two hours)	120 Min.

BY DANNY LITWHILER

Baseball Coach, Florida State University

IN OUR opinion, it is of prime importance for a baseball coach to keep his players busy every minute of a practice session in order to impress upon them that they have to work before they can become a winning team.

Since entering the coaching profession, we have found that it is necessary to have a set pattern for our practice sessions so the players will know what they are supposed to be doing every minute. In order to avoid slighting some of the fundamentals, a clock or a watch can be used to time the practices.

It is not necessary to plan the practice sessions in advance. By making up his mind just before he goes onto the field, the coach can take weather conditions and last-minute developments into consideration in scheduling the day's work.

The coach must think in terms of the player and how to get the most out of him. When a player comes on the field, the first thing he wants to do is either throw or bat a ball, and he should be permitted to start his practice this way. Since these are the most important fundamentals of the game, they should be done first in a practice.

As soon as they come onto the field, the outfielders and infielders should begin organized pepper games. Pitchers and catchers should begin working together right away.

After the loosening-up period, which should last about 15 minutes, batting practice should be started. Now the coach can start to get the most out of a practice.

While the batters are in taking their licks, the extra pitchers and catchers should be assigned to infield and outfield fungoing. At first this practice may appear chaotic, but if it is properly arranged, the player who is hitting the fungos to the infield will learn to time his hits so they are made between pitches to the plate.

Meanwhile, the infielders are learning to field the ball off the bat at the plate, in addition to the work they are receiving from the fungos. It sharpens their wits and keeps them busy all the time.

After batting practice, usually about an hour for the average team, the coaches, managers, and pitchers should be assigned a position in the infield where they can hit the ball in rapid succession for about ten minutes. During this time every infielder will receive individual attention from a coach who can point out his fielding weaknesses and work with him to correct them.

While this part of the practice is going on, the pitchers and catchers should be assigned to hitting to the outfielders. The extra catchers can work along the sidelines on such fundamentals as blocking the ball, shifting to either side to handle wild pitches, and working on pop flies and bunts. The pitchers can work on their moves to the bases.

When this phase of the practice has been completed, everyone should be called and instructed to work on the general fundamentals of the game like base-running, actual bunt situations, pick-off and cut-off plays, the defense and offense of the delayed and double steals, and handling pop-ups to the infield and the outfield.

Considerable time should be spent working on pop-ups. They can hurt a team badly when misplayed in a game. All of the players should learn to distinguish each other's voices and know who should be the one to make the catch.

The value of this particular drill cannot be underestimated. We have seen many games lost because of a mix-up on a seemingly easy pop fly.

At this point the practice should have lasted about an hour and a half, and most coaches would be about ready to call it a day. Now psychology should be put to work to make the players realize just how hard they must go in order to win.

With this thought in mind, the regular infield practice with the outfielders making their throws to the bases and the infielders throwing *around the horn* should be started. The coach should work for pep in this drill and keep reminding his players that the other teams are calling it quits.

This drill can be continued as long as the coach thinks is necessary, but he should have his pitchers and catchers running while it is going on. We try to make this practice as enjoyable as possible. No player likes to run just for the sake of running; he usually thinks of running as the pill he has to take with every practice.

In our practices, the player takes a ball, runs by one of the managers or another player, gives him the ball, and then runs out for a pass as would a football player. He continues to take a ball and runs a little farther each time.

(Concluded on page 54)

DANNY LITWHILER played eleven years as a major leaguer, retiring in 1951. He holds the major league record of accepting 317 chances in 187 consecutive games without making an error. The glove he used in setting this record is on display in the Baseball Hall of Fame.

Percentage Baseball for the Defense

BY C. J. KRISTUFEK
Assistant to the Athletic Director, University of Illinois, Chicago, Illinois

PERCENTAGE baseball is sound baseball because it deals with calculated odds instead of uncalculated chance. The team that plays percentage baseball is the one which has the best odds in its favor. However, a team that always plays percentage baseball is a team which lacks imagination and, consequently, seldom surprises an opponent. Good opposition, knowing the game situation, can predict the maneuver of a team that plays only according to percentages. Therefore, it sometimes pays off for a team to deviate once in a while from percentage baseball.

This article takes up the analysis of possible play maneuvers. In other words, it deals, as much as possible, with game situations that are played *according to the book*. In the first part of this two-part article, we will discuss the aspects of defensive percentage baseball. In the April issue we will follow it with percentage baseball as it applies to the offense.

The Intentional Pass

When deciding whether or not to give an opposing batter an intentional base on balls, the following rules should be remembered: 1. Do not intentionally walk the potential tying run except in very unusual cases. 2. Do not intentionally walk the potential winning run except in very unusual cases. 3. Do not advance another runner with an intentional walk except in very unusual cases. First base should be open. If first base is not open, an intentional walk advances the runner on first base to a scoring position.

These rules should be considered even when the opposing team's best batter is at bat. The best batter is not likely to tie the score or to put his team ahead by hitting a home run. In fact, the odds are against the batter getting a base hit, regardless of his ability. For instance, the odds against a .400 batter getting a hit are five to two.

An intentional base on balls is sometimes advisable when a runner is on second base, on third base or on second and third bases. If the chances of the batter who is at the plate getting a base hit are greater than the chances of the following batter, an intentional walk might be good strategy. Furthermore, if the batter is walked intentionally, the chances are he will not score. In order to score a runner from first base, two one base hits or a long base hit are usually necessary.

An intentional base on balls is used frequently to set up a double play, particularly if the following batter is slow on his feet and, preferably, right-handed. Occasionally, a base on balls is given to the eighth batter, when a runner is in scoring position, in order to get at the pitcher. This latter case can be good strategy if the reason for getting to the pitcher is to force the opposition to use a pinch hitter and, therefore, to take out the pitcher. However, it should be remembered that the pitcher might be a better hitter than the eighth batter. Furthermore, if the pitcher is not removed for a pinch hitter and strikes out, the following batter is the lead-off man, who usually hits well. If the pitcher's out is the last out of the inning, which in this case it usually is, then the lead-off man bats first in the next inning.

The situations in which an intentional base on balls is almost always given are as follows:

1. When the winning run is on second base, first base is open, and the batter who is at bat is good or better than the following batter in the line-up. In this situation, the batter who is given the intentional pass cannot possibly hurt the defensive team. A runner on first base means nothing because the winning run is on second base. In addition, when a runner is on first base, the infielders have an opportunity to execute a force play. On some hit balls, a force is the only means of obtaining an out. Furthermore, with less than two outs, the defensive team has a much better opportunity to execute a double play. In turn, a double play deprives the team that is on offense of an additional chance to score.

2. When a runner is on second base, first base is open, and the offensive team's best batter is at bat, providing, of course, the batter is not the potential winning or tying run. In this situation, the defensive team plays percentages and takes its chances against a weaker batter. The odds on the weaker batter getting a hit are not as good as the odds on the best batter getting a hit. Furthermore, as stated previously, the defensive team can execute a force play or possibly, if there are less than two outs, can make two outs on one batted ball. Frequently, however, the batter is not actually walked intentionally but is not given anything good to hit. Then, if the batter does not swing and the pitcher gets in a hole, he takes no chances and purposely puts the batter on base with a walk. If the batter does swing at one of the poor pitches, he is not likely to hit the ball squarely.

3. Let us consider a situation where the winning run is on third base with less than two outs. If there is one out in this situation, the batter is walked and then the defense is able to play a ground ball to the plate or to second and then to first for a double play. A good defensive infield that is capable of involving the offensive team in a double play can then play at double play depth and, consequently, is able to stop more batted balls than an infield that is playing all the way in.

In this situation, if there are no outs, the next two batters are walked. By filling the bases, considerable pressure is taken off the infielders because the defensive team is given the opportunity to make a force play at home base. However, if the pitcher has control trouble and the defensive team does not have a dependable relief pitcher, it might be better strategy not to fill the bases.

4. When runners are on second and third bases, first base is open, and the batter at bat is as good as the following batter in the line-up, providing he is not the potential tying or winning run. By filling the bases, the defensive team is given the opportunity to make a force play at any base. Furthermore, with less than two outs, the infielders have a much better opportunity to execute a double play when the bases are full. However, the batter probably should not be walked intentionally

HERE are your benefits in the Raleigh

RECONDITIONING Shoe Life Extension PROGRAM

Raleigh offers the very BEST of shoe reconditioning PLUS a complete array of services to *extend* shoe life, to improve wearability *and play*, to safeguard the feet of athletes, and to make the issue and control of shoes by the coach as easy and efficient as possible. *Check these services . . . then send your shoe problems to Raleigh!*

A NEW "Five Cycle System" for Shoe Control

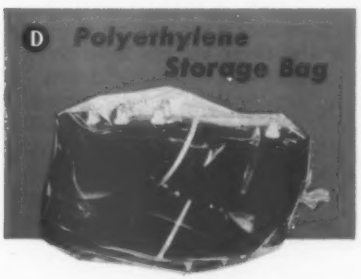
1. Positive Shoe Identification is enabled by a numbered leather disc, firmly sewed on . . . colored to indicate year of issue and use: 1958-White; 1959-Red; 1960-Green; 1961-Tan; 1962-Maroon.
2. Numbering assures proper pairing . . . prevents mismated shoes that impair players' feet and play.
3. Color of Disc indicates year of first use or reconditioning . . . for inspection and economy control.
4. "Five Cycle System" enables coach to determine which makes of shoes give longest service!
5. System makes work of coach easier, more complete . . . enables assignment of responsibility for shoes!

B Faultless Repairing and Reconditioning

Raleigh experts specialize in athletic shoes. They know the fine points that make them most comfortable and playable . . . from inspection and sterilizing on through the final 2-spray finish (rubber and plastic) . . . a fine finish that does not soil the hands no matter how many shoes are handled. The finish *water-proofs* the shoes!

WHEN IT'S FROM RALEIGH, IT'S RIGHT!

Designed and made by Raleigh, lighter, last longer! Safe, rust-proof tip cannot burr or fall out. Cleat sheds mud, stays clean. Threaded insert and tip *in one piece!* Nylon "nobs" lock cleat to post. *Outlast rubber or aluminum five to one!*



Shoes are dry when you get them and they stay dry! They are easily identifiable as to number and size because of the see-thru bag. No individual shoe handling and no mis-mating!

After play, Lasts should be inserted in athletic shoes. Shoes dry better, keep their shape longer, wear better and keep players' feet in good condition. The Last should be a MUST for every shoe!

RECONDITIONING DIVISION

Raleigh ATHLETIC EQUIPMENT CORP. NEW ROCHELLE, NEW YORK

Insist on the best in reconditioning. Send your players' shoes to Raleigh!

RALEIGH REBUILDS EVERYTHING

if the pitcher has poor control. If a good batter is at bat with runners on second and third bases, the odds on the batter getting a base hit should be weighed against the odds of the following batter getting a base hit or a base on balls. In addition, the psychological factor of pitching with the bases full should be considered. Is the pitcher able to pitch effectively knowing that a base on balls means a run?

Left-Handed Pitcher vs. Left-Handed or Right-Handed Batter

Because the curve ball of a left-handed pitcher breaks away from the left-handed batter, the left-handed batter usually has more difficulty hitting the left-handed pitcher. On the other hand, the curve ball of the left-handed pitcher is usually hit more effectively by the right-handed batter because the ball breaks toward him. By the same token, the left-handed batter usually finds it easier, in comparison with the right-handed batter, to hit the curve ball of the right-handed pitcher. However, before substituting a right-handed batter for a left-handed batter, it must be decided whether or not an inferior right-handed batter can hit a left-handed pitcher better than an average left-handed batter. Similarly, before substituting a left-handed batter for a right-handed batter, it must be decided whether or not an inferior left-handed batter can hit a right-handed pitcher better than an average right-handed batter. Generally speaking, if two players are equal in batting ability, and one is a left-handed batter and the other is a right-handed batter, the left-handed batter should get the nod to bat against right-handed pitchers and the right-handed batter should get the nod to hit against left-handed pitchers. Of course, a good batter can hit all types of pitches and, consequently, ought to be permitted to bat against all types of pitchers.

In addition to the side of home plate to which the batter swings, other factors should be considered when deciding on a pinch hitter. If the batter is first up, what type of lead-off hitter is he? If a runner is to be advanced, is the batter a good bunter or can he hit effectively behind the runner? If a runner is on third base, is the batter able to hit a long fly? If the pitcher is a curve ball pitcher, is the batter capable of hitting curve balls? If the pitcher is a fast ball pitcher, is the batter capable of hitting fast balls? If the pitcher keeps the ball low, is the batter capable of hitting low pitches?

When deciding to pitch a left-handed pitcher or a right-handed pitcher against a batter, the pitchers can be judged in a similar manner as batters are judged.

Playing Deep or Playing In

The infield and the outfield play deep when there are two outs and no one on base. Furthermore, the first and third basemen protect the baselines more carefully. In this situation, the defensive team plays conservatively and tries to prevent an extra base hit. If an extra base hit is prevented, three hits are usually necessary to score a run. With two outs, the probability of getting three hits is very slight. On the other hand, if the team on offense can get an extra base hit, it usually needs only one other hit to score a run. Although the chances of getting two hits after two outs are not too good, they are much better than the chances of getting three hits after two outs. The outfield also plays deep when there are two outs and a runner is on first base. In this situation, the defensive team tries to prevent an extra base hit because it might result in a run.

When a runner is on second base, the infield plays deep unless, of course, a bunt is expected. The purpose of playing deep is to try to prevent a base hit from going through the infield. If an infielder can stop a ground ball base hit, he can usually prevent a runner on second base from scoring.

If the batter represents the tying or winning run, the infield and the outfield play deep. Of course, the purpose of playing deep in this situation is to try to prevent the potential tying or winning run from getting to a scoring position. On the other hand, if the potential winning run is on third base and there are less than two outs, the infield and the outfield must play in to try to prevent the runner on third from scoring. The outfielders, in this situation, play in close enough to throw out the runner who is attempting to score from third base after the catch of a fly ball. There is no need to worry about the batter because if the runner on third scores, the game is over. Generally speaking, the outfield plays in whenever the infield is drawn in.

Whenever a situation calls for the defense to play in, the distance the defense moves in depends upon the strength of the batter, the throwing and fielding abilities of the defensive players, the skill of the pitcher, the ball and strike count on the batter, and the speed of the runners.

In the early part of the game (first through third innings), the defense is usually more concerned with preventing a big inning than preventing one run. Remember, when the infield is drawn in to attempt a possible play at the plate, the chances of the batter getting a base hit are increased. When the infield is drawn in, the poor hitter can turn into a dangerous hitter and the good hitter can turn into a sensational hitter. The odds against a .300 batter getting a base hit are 10 to 3 but the odds against the same batter when the infield is drawn in are something like 50 to 50.

In the early part of the game, with less than two outs, the infield usually plays deep when the score is even and a runner is on third base. If a weak batter is at bat, the first and third basemen play in slightly. Then, if a hard hit ground ball is hit to the first baseman, the third baseman, or the pitcher, the play can be made at home. However, if the team that is batting has a very good pitcher, the defensive infield should probably play in because one or two runs are often enough to win for an exceptional pitcher. If runners are on second and third bases, the infield plays deep. A base hit in this situation not only puts another runner on base, but also usually results in two runs scoring. If runners are on first and third bases, the infield plays fairly deep and goes for the double play when there is one out.

When there are no outs, the defense tries for the double play, although it may be to the plate on a ground ball to the first baseman or to the pitcher. Since the first baseman plays in to keep the runner close to first base, he may play a ground ball to home base, if the runner on third tries for home. The pitcher is also in a position to catch a runner who is attempting to score. If the bases are full, the infield plays deep and tries for the double play. In this situation, the pitcher plays the ground ball to home and the catcher then relays the ball to first base. If the batter is a right field hitter, the third baseman plays in and plays the ground ball to home, unless it is hit far to his left. The first baseman is also frequently in position to play the ground ball home in this situation, providing the ball is not hit far to his right, because he has to keep the runner on first fairly close to the base in order to make a double play possible. If the batter is a left field hitter, the first baseman plays farther in. In the other cases, the ball is played to second base and then to first for a double play.

If the defensive team is one run ahead in the early part of the game, with less than two outs, the infield plays deep whenever a runner is on third base, or whenever runners are

(Continued on page 50)

BY JAMES H. LEIGHTON, JR.
Tennis Coach, Presbyterian College, Clinton, South Carolina

Analysis of the Forehand Drive

IN this article we will present opinions of some of the great players and excellent teachers of the game of tennis. The players we have selected are Bill Tilden, Don Budge, Ellsworth Vines, Jack Kramer, and Helen Jacobs; the teachers, Lloyd Budge, Tom Stowe, Mary K. Browne, and Harwood White. We will also tie together some of their ideas and comment on them, and a few ideas of our own will be added. These comments are not in any way a final opinion, but rather some of our personal beliefs.

The dynamics of hitting a tennis ball is an interesting subject and the fact that it must be adapted to individuals with varying physiques and temperaments makes it more interesting. With the exception of a few obvious points, it is unwise to be too arbitrary about stroke production. There are too many variables, too many ramifications, and too many shadings in a movement that is so subtle. Because we are quoting a wide range of players and professionals, most of the possibilities in hitting a forehand shot will be outlined in this article. Research in the game of tennis has been sadly neglected; therefore, in many instances there can be no final answers. However, this article may be of help in pointing out the extremes and showing where the middle-of-the-road thinking lies. We plan to follow this article with a similar one on the backhand.

Further, since the teaching of tennis involves the sound application and presentation of ideas, it naturally follows that the greater the breadth of ideas, the better the teacher, and as each idea can be expressed in many ways, it is important that the teacher have a definite flexibility of expression in presenting these ideas.

In all cases but one it has been simple to break down the opinions of this stroke into five sections: 1. Footwork; 2. Backswing; 3. Forward Swing; 4. Hit (sometimes referred to as contact or impact); 5. Follow-Through. Now, let us listen to our panel of experts.

Footwork

Ellsworth Vines—The player's shoulders and body should be sideways to the net. His right foot should be forward in the last step of his run for the ball. He should step into the shot with his left foot, but his left foot should be set before he hits the ball. His toes should point toward the sideline. The player's body weight should be almost completely on his left foot and into the shot before the forward swing starts.

Bill Tilden—The secret of a sound drive lies in early preparation for the shot and in the player placing his feet in a correct position to keep his body sideways to the net, his rear end out of the way of the ball, and his weight moving forward with the stroke. He should step across directly toward the right sideline with his left foot.

Helen Jacobs—The player should step out with his right foot toward the sideline as he draws his racket back. Just before the racket begins to move forward, his left leg comes across to the right. His left leg should be about a pace ahead and to the right of his foot, and at approximately a 45 degree angle to the net.

Don Budge—When a burst of speed is necessary, use the side skipping method, and then turn and break into a run. The approach should bring the player to a position about five feet back of the spot where he judges the ball will strike the ground, and approximately arm's length inside the line of flight of the ball. His arrival should be timed ahead of the ball's contact with the ground. Assuming he skips into position before the ball pitches from the ground, he should then bring his right foot back in a quarter turn of his body to the right. His right foot now points toward the sideline, and his left almost toward the net. As he takes this side stance, he starts the backswing. When the racket head goes back, his weight is shifted to his rear foot. As the racket goes forward, his weight goes along with it. At the moment of impact the player's weight is squarely on his left foot.

Jack Kramer—The player steps forward with his left foot so that he is sideways to the net. His weight shifts forward to his front foot as he brings his racket forward to meet the ball.

Lloyd Budge—The player should stand sideways to hit the ball. This position gives the swing arm support from the weight of his body. He should keep his legs as movable as possible until the ball has been judged. The short steps of a boxer are the best means to use for position. By keeping the ball out, it will be easier for the player to move out than away. As the ball strikes the ground, he should transfer his weight back. There should be a slight movement forward of his left leg as the player transfers his weight. His left leg should be braced after the transfer of weight to take the full force of his body being thrown into the ball. His right leg should be back and to the left. When a shot is wide, the player should run out and then pause to shift his weight. He should rush to the spot where the ball will be hit, stop on his right leg, turn sideways, and skip into position for all forward balls. Footwork is a prime factor in placing the ball. In order to hit to the left side, the player should point his left leg there. To conceal direction, he should use a short movement of his front foot. He should not swing his left leg too far across his right for any shot.

Mary K. Browne—The player should turn sideways to the net. At the beginning of the stroke, he should get his weight back by using the short quick steps of a boxer.

Tom Stowe—The player should put his weight on his right foot as he

turns it parallel with the baseline. As he strokes the ball, he steps forward toward the net with his left foot. His feet should be parallel with the sidelines, and his right knee should be bent to allow his hip to turn in. When running for the ball, the player should start with his right foot and take three quick steps (on balls eight to ten feet away). He should arrive on his right foot and be ready to step in and hit.

Harwood White—Mr. White presented his theory of the forehand drive in a series of articles entitled *Stand Sideways* which appeared in the April and November, 1948 issues of *American Lawn Tennis*. While his views are controversial, they are worthy of consideration. Since his analysis of the forehand does not fit into the form we are using, we are merely paraphrasing his remarks.

Mr. White's main premise is that professionals, coaches, and instruction books which preach stand sideways on the forehand are wrong. His conclusions are drawn from instruction he received from a professional coach who had him face the net and hit balls on the forehand side in this manner, bringing his left foot in as he swung; and from an analysis he made of players during one of the Southwest Pacific tournaments.

He recorded only three strokes executed in the orthodox stand sideways position. He says sideways position is described by professionals in the following ways: body at right angles to the net; soles of feet parallel to the net; left foot advanced toward the right sideline; shoulders parallel to the line of flight of the ball; meet the ball opposite the belt buckle; maintain the sideways position until the ball has been struck.

According to Mr. White, this sideways position is an awkward one, precluding as it does, a natural rotation. Rotation is the key point. It must first produce a good backswing. A certain amount of turn to the side is absolutely necessary for anything like a full swing, but turning sideways is not the same as standing sideways. Rotation is supposed to bring power to the shot. However, it cannot produce this power when the ball is hit at the belt buckle. Sideways position is maintained until the ball is struck, and rotation starts at that point. What good will rotation do when the ball is struck? The ball leaves the racket instantly and nothing the player adds can have the slightest effect; therefore, delayed rotation is merely window dressing. The stand sideways position definitely hinders forward rotation for power.

When he is using the standard stand sideways position, the player has no urge for forward swing. His body is not wound up like a spring, suggesting the need of release into forward rotation. Two important things in rotation are relaxation and body rotation which must precede the swing. Only after it is well underway, should the forward swing of the player's arm and racket begin. Freedom and power are the secrets of ease. In other sports relaxation and turn the body first are accepted, but not in tennis, because the stand sideways position makes them impossible. Learning orthodox position tends to set timing late.

We have omitted from Mr. White's theories some of the points on which there is full agreement, such as a player's knees should always be bent slightly and used as an elevator; he should run on the balls of his feet; he should not bend his trunk; his weight should be on his rear foot at the end of the backswing; his wrist should be firm at the point of contact; and the ball should be hit waist high.

JIM LEIGHTON was appointed tennis coach at Presbyterian College eight years ago, and during the summer he serves as tennis professional at the Charleston, W. Va., Tennis Club. In this series of articles, Leighton is using a different approach in analyzing the tennis strokes. First, he presents the views of a number of recognized authorities, and then he sums them up by explaining which methods he prefers and why.

From Tom Stowe's *hit opposite the belt buckle* to Tilden's *placing of the feet to keep the body sideways to the net,* our eight experts fit neatly into Harwood White's picture of standard teaching, do they not? Are they wrong in their interpretation of footwork? No, they are not, nor should White's theory be brushed over lightly. First of all, they are all agreed that the player's body does pivot to the right as the racket goes back. However, this pivot will vary with the individual, the length of the backswing, etc.

For instance, when a player is running for a ball, the turn of his shoulders is probably not as great as it would be in the case of a closer ball, but there is definitely a turn of the shoulders into something approximating the perpendicular to the net. We do not believe that Harwood White is objecting completely to a player having his legs lined up in a sideways position before hitting because many of the pictures he uses to show good footwork indicate this position.

Mr. White does object to a player placing his feet parallel to the net and he has something here, particularly in the case of the player's left foot, which can limit the rotation or pivot. He does not think a player should place his left foot across his right at a 45 degree angle, or greater, and here again he is right in saying there is a limit to the pivot or rotation.

Mr. White further objects to a player maintaining the sideways position to the point of contact, and it is somewhat puzzling to us that this point creeps in as much as it does. Pictures Mr. White used showed this position which is advocated by professionals and used by some players. Tilden shows it in his book, but only as a posed position. Actually, we do not believe they use it in practice nor do we believe it is actually taught as much as Mr. White suggests. It is more natural for the player's shoulders to be slightly open or facing the net somewhat at the point of contact.

Mr. White objects to the use of the phrase, *ball hit at belt buckle,* and we are in agreement with him on this point. If the Eastern grip is used, the ball will be hit much further in front than the player's belt buckle. Hitting as late as this point can only result in a cramped curtailing of power. Of course, if the continental grip is used, the ball may be hit that late. Although we can go along with Mr. White on the above points, we cannot go all the way with his insistence on *always* facing the net, and bringing in the left foot while swinging forward.

In our opinion, Mr. White's largest contribution is his insistence on the importance of the rotation. However, rotation calls for some defining. It cannot be completely horizontal rotation. There must be somewhat of a triple motion—the rotation, the player's weight going forward, and a slight dropping of the player's right shoulder on most balls which are hit waist high or below. Only with a combination of these three movements will the racket go through the ball and not around it. Rotation may start a bit ahead of the swing, but the player must be careful because if it is

(Continued on page 65)

Analgesic Balm

Special ("Hot") Analgesic Balm

Germicide

Skin Toughener

Athletic Ointment

Tape and Bandage Adherent

Tape Remover

Dextrose Tablets; Salt Tablets;
Aspirin Tablets; Ammonia Capsules

Trainers Kit

Sold only by sporting goods dealers

BIKE

The Bike Web Company
Division of The Kendall Company
309 W. Jackson Blvd., Chicago 6, Ill.

BY
HERBERT C. COLLINS, JR.

Physical Education Department,
Toaz Junior High School,
Huntington Station, New York

Place Kicking A Neglected Skill

TODAY, place kicking seems to be a forgotten skill except in the case of the professional and top college teams. Time after time high school and small college teams resort to running or passing the ball for an extra point, and lose games by one point because the players are not able to kick the ball through the uprights.

The late Jim Thorpe used to plead, *Put the foot back in football,* and felt it was up to the high school coaches to develop place kickers. Almost every college coach will say that there is a place on his team and a letter waiting for the boy who can kick the ball through the uprights consistently. Proof of these statements lies in the money that is spent and the talent which is sought in the professional ranks.

Some of the *greats* stay in the professional game for years and compile enviable records. Ken Strong, in twelve seasons with the New York Giants, kicked 169 points. Don Hudson, one of football's greatest ends, kicked 174 points after touchdowns during eleven years. Lou Groza, and a handicapped, toeless Armenian boy by the name of Ben Agajanian, reached new heights in the world of place kicking. Ken Strong, at the age of forty and still playing with the New York Giants, stated, *After years of playing in college and professional ranks, the feel of my toe against a good solid football remains one of the great thrills of the sport.*

Although some coaches advocate teaching place kicking in high school, we feel a great deal can be accomplished by the physical education personnel in the elementary schools and especially at the junior high school level, where interest is high and the boys enjoy this self-testing type of activity. At these levels the boys should be made to realize the importance of place kicking and taught the fundamentals of the skill. As fundamentals are taught they should be practiced, and practice can be conducted in various and interesting ways. One method which can be used is to have the boys form two lines. Then the lines kick for the same goal and a score is kept for each line. The team that has the greatest number of successful kicks is declared the winner.

At Toaz Junior High School place kicking is considered of equal importance with passing, punting, and the other elements. The boys are given demonstrations, diagrams are placed on the blackboard, and picture sequences are posted on the gymnasium bulletin board. Then the boys are given drills simulating game conditions whereby they practice the skills learned.

In our physical education classes the boys have pass football leagues and the rules demand a try for an extra point after each touchdown. The goals we use are not the elaborate uprights used on a regulation field, but are inexpensive scrap pipe eight yards wide and eight feet high which double as soccer goals. Our boys kick from twelve yards out and they must keep the ball on the ground until it is kicked. Tees or elevation of the ball is not allowed.

At the end of each unit, tests are administered to each grade and in each skill. Ten kicks are required for place kicking and those boys who kick a perfect score have their names

(Concluded on page 57)

What to look for when buying

SPORTS FLOODLIGHTS

Some floodlights give you more for your money than others. Make sure you get *all* the time-tested features that mean easier installation . . . less service trouble . . . longer operation . . . greater economy over the years. Before buying any floodlight, ask yourself these questions . . .

FEATURES	CROUSE-HINDS TYPE FLA	Mfr. A	Mfr. B	Mfr. C	Mfr. D	Mfr. E	Mfr. F
1. Does it have a backdoor for easier lamp replacement and cleaning?	Yes	Yes	No	Yes	Yes	Yes	No
2. Is there a sight on the axis for more accurate aiming?	Yes	No	No	Yes	No	Yes	No
3. Are the door catches adequate for permanent weather-tightness?	Yes	No	Yes	No	Yes	Yes	No
4. Is the floodlight wired, eliminating additional costs?	Yes	Yes*	Yes	No	Yes	Yes	No
5. Is the socket shell plated to prevent corrosion and lamps "freezing" in?	Yes	Yes	Yes	Yes	No	No	Yes
6. What is the socket temperature? (UL maximum safe operating temperature 200°C)	185°C	232°C	226°C	227°C	269°C	211°C	259°C
7. What is the cable temperature? (to minimize insulation deterioration)	135°C	143°C	202°C	150°C	231°C	173°C	195°C
8. Is the lens heat-tempered to prevent breakage?	Yes	Yes	Yes	Yes	Yes	Yes	No
9. Will the Floodlight withstand the UL rain test?	Yes	Yes	Yes	Yes	No	No	No
10. Are the gaskets adequate for permanent weather-tightness?	Yes	No	No	Yes	Yes	No	No
11. Is the floodlight rigidly constructed for longer life and accurate aiming?	Yes	No	Yes	No	Yes	Yes	No
12. Can you rotate the wire entrance to simplify wiring?	Yes	No	No	No	No	No	No
13. How many beam spreads are available and what are their efficiencies?							
— 14° . . . 45.3%		N.P.x	N.M.	N.M.	N.M.	N.M.	N.M.
— 20° . . . 44.9%		N.P.	43.8%	41.2%	N.P.	N.P.	N.M.
— 35° . . . 48.6%		N.P.	49.1%	50.5%	45.2%	N.P.	38.6%
— 50° . . . 50.2%		N.M.†	N.M.	N.P.	N.M.	N.P.	N.M.
— 80° . . . 57.8%		N.P.	54.5%	N.P.	N.P.	N.P.	60.3%

†N.M. Not made by this company. xN.P. Test data not published. *At extra cost.

• Cut out and save this technical guide

• Crouse-Hinds' illumination engineers will be glad to discuss your floodlighting problems with you at your convenience. Free Bulletin containing sports floodlighting layouts for all night sports and complete specifications of type FLA floodlights sent on request.

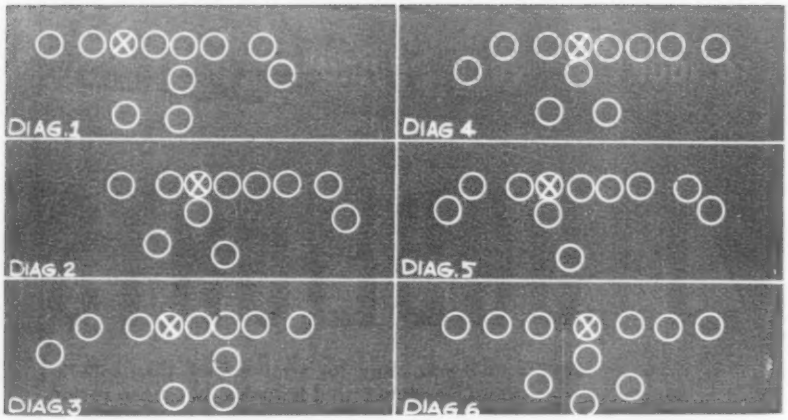
A NATIONWIDE DISTRIBUTION exclusively through ELECTRICAL DISTRIBUTORS

CROUSE-HINDS COMPANY

SYRACUSE 1, N. Y.

OFFICES: Birmingham Boston Buffalo Chicago Cincinnati Cleveland Dallas Denver Detroit Houston Kansas City Los Angeles Memphis Milwaukee New Orleans New York Philadelphia Pittsburgh Portland, Ore. St. Louis St. Paul San Francisco Seattle Tulsa Washington RESIDENT REPRESENTATIVES: Albany Atlanta Baltimore Baton Rouge Charlotte Chattanooga Corpus Christi Reading, Pa. Richmond, Va. Shreveport, La.
Crouse-Hinds Company of Canada Ltd. Toronto, Ont.

FLOODLIGHTS • CONDULETS • TRAFFIC SIGNALS • AIRPORT LIGHTING

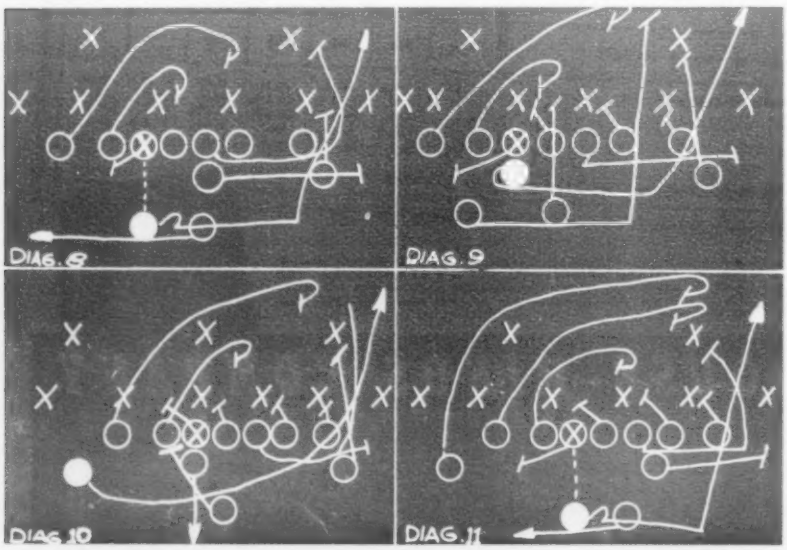


Multiple Offense for the Small High School

BY RAY JOHNSON AND WAYNE WILKINS
Football Coach and Assistant Football Coach
Fairview, Montana, Consolidated Schools

DURING the past three years we have developed a multiple offense which, in our opinion, offers many advantages to the coaches in the smaller high schools throughout the United States. Our offense consists of an unbalanced line single wing (Diagram 1), a winged T (Diagram 2), a wingback flankered left from both the single wing and winged T (Diagrams 3 and 4), a T double wing (Diagram 5), and a split T (Diagram 6).

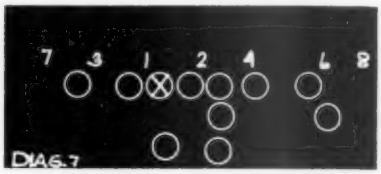
A very simple system of rule blocking is used for our unbalanced line. The holes are numbered from 8 through 2 on the strong side, and from 7 through 1 on the weak side. Our backs are numbered 1, 2, 3, and 4 (Diagram 7). We use Jim Tatum's split T blocking with which almost every coach is familiar.



Diagrams 8, 9, 10, and 11 show the use of rule blocking on our off-tackle play, in which four different formations are used. Diagram 9 shows a belly play.

Our offense from the single wing consists of a tailback half spinner series with keeps by the tailback off-tackle inside tackle, a trap up the middle, reverses to the fullback and wingback to the weak side, and a pass by the tailback off a half spinner to the left end or fullback. The tailback is also used as a passer and for quick kicking. The other portions of our offense consist of three power plays by the fullback, and a buck lateral series of four plays.

The winged T series consists of quickies to the left halfback and fullback, pitch-outs to the weak side, a reverse to the wingback, an excellent series of belly plays, and a passing attack using the quarterback.



Our wingback flanker left series plays are power plays and pitch-outs to the weak side, plus the regular plays to the strong side.

The T double wing is used for passing and running, and for a particular type of draw play which we use.

Our split T plays are quickies to either halfback, slants off-tackle by the fullback, options to either side with the quarterback keeping, a jump pass off a fake hand-off, an end around, and a reverse.

To our way of thinking, the advantages of the multiple offense in a small school are as follows:

1. It creates a problem for the defense, especially for teams that have limited talent.

2. Today the split T is king throughout the country. Of the nineteen Class AA and Class A schools in Montana, only three schools use any form of the unbalanced line, and only one of these schools uses a single wing. The unbalanced line with its double teams and trap blocks is something different for the opposition to worry about. Herein lies the greatest advantage of the multiple offense. We have our players scrimmage against both the hard blocks of the unbalanced line, and the quick blocks of the split T. Our quarterbacks and centers are trained to open to either

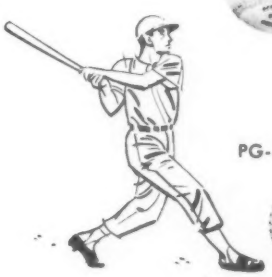
(Continued on page 53)

PF-6 Football

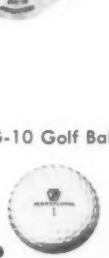
PB-6 Basketball

FROM FIELD TO GYM...

PIC-12 Softball



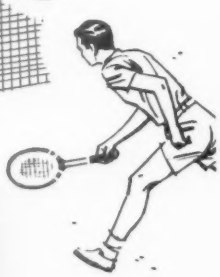
PG-10 Golf Ball



...POOL TO COURTS

SF-L Swim Fins

X-76 Tennis Ball



PENNSYLVANIA

tops them all

Whatever the sport and whatever the skill level, Pennsylvania offers top quality equipment at budget prices for your varsity and physical education programs. Ask your sporting goods dealer about Pennsylvania Athletic Products' full line for a full program.

"Preferred for Performance"

Look for this seal on every box—your assurance of top quality and consistent performance.

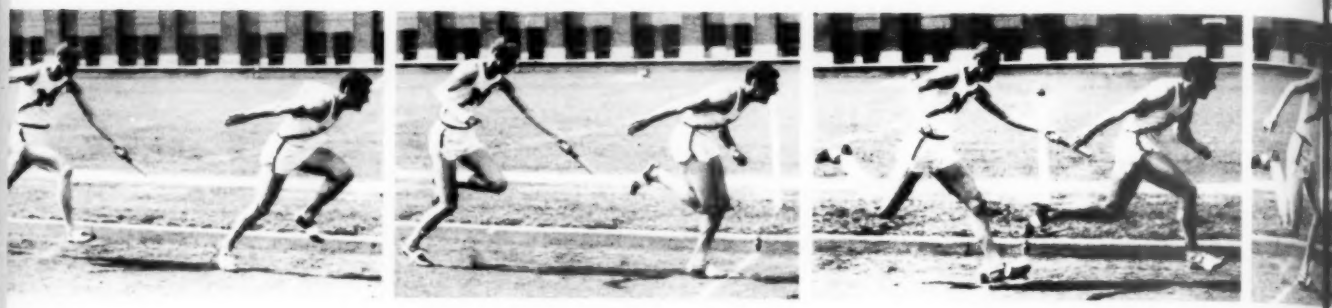
THE GENERAL TIRE & RUBBER COMPANY
PENNSYLVANIA ATHLETIC PRODUCTS DIVISION
Box 951 Akron, Ohio

FOR YOUR BULLETIN BOARD

Demonstrat... DICK

THE SPRINT RELAY EXCHANGE

One of the most efficient of the blind baton hand-offs is used in the sprint relay exchange. Because the incoming man is relatively fresh, he can take the responsibility for getting off the pass. The outgoing man does not look back and thus he can move out faster. This pass is particularly effective because it allows the men to pass from the greatest distance apart thus gaining yardage. The outgoing runner starts to move through the zone when the incoming man is from five to seven yards away. His only duty is to sprint at top speed as he reaches back with an open hand to present a target for the incoming man. The incoming man brings the baton up and into the hand of the outgoing man. As the tendon between the thumb and forefinger is hit, it forces the hand to close on the baton.



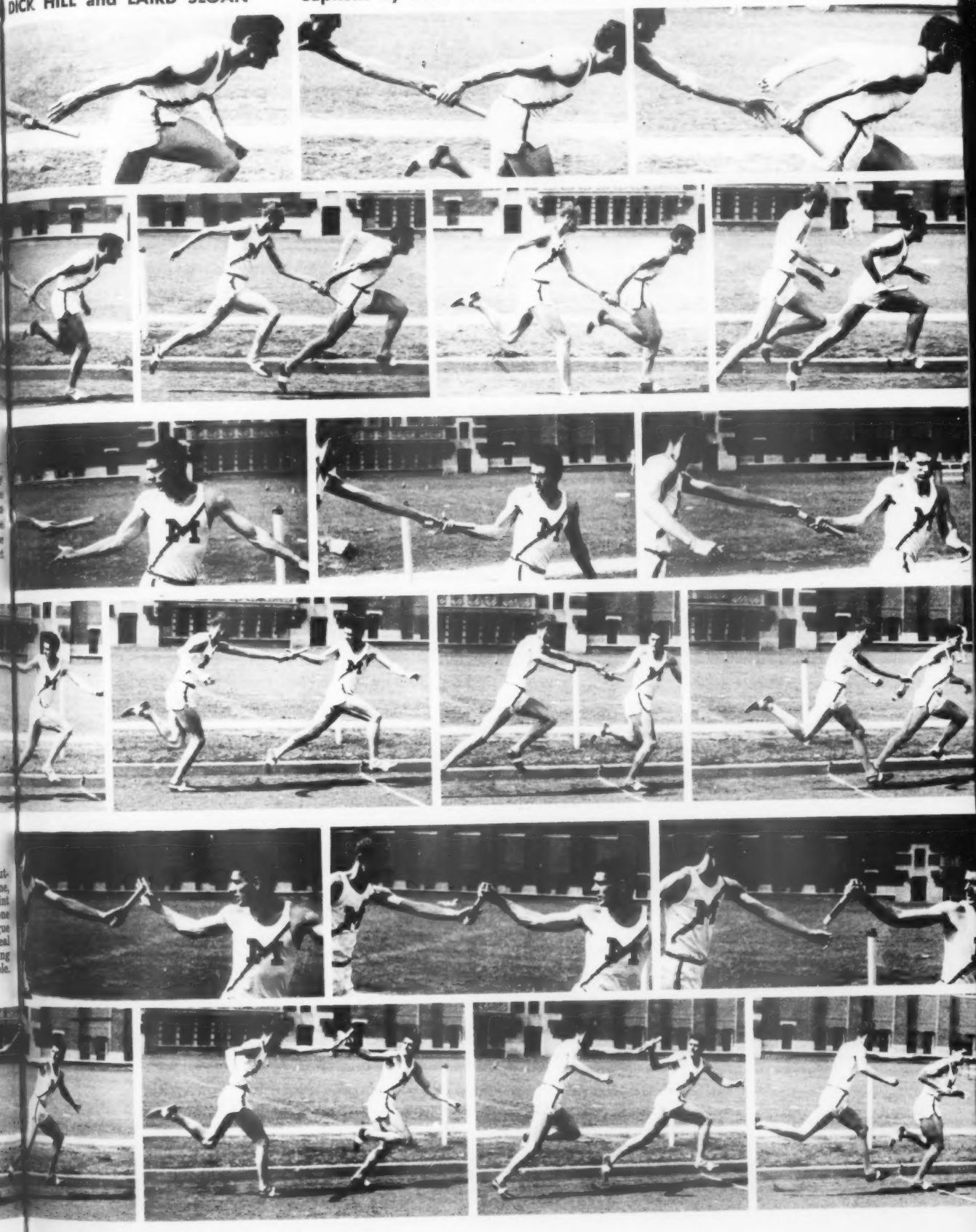
THE MILE RELAY EXCHANGE

The most common mile relay pass is visual since the incoming runner is fatigued and must not be expected to hit a target as he would in sprint relay passing. Here the outgoing man looks back to judge the fatigue of his teammate and to govern his speed through the zone. Actually, the outgoing man has the responsibility for the exchange. This pass is effective because the men can pass the baton the length of two full arms apart. As the incoming man points the baton directly forward, it is taken with an upward movement by the outgoing man. When the incoming runner is from six to eight yards away, the fresh man starts to move through the zone. He attempts to be moving at actual race pace when he reaches the center of the zone. In mile relay racing a perfect baton pass must be made in zone center.

THE DISTANCE RELAY EXCHANGE

The safest pass is usually used in the distance relays. Because the incoming runner is often very fatigued, his only responsibility is to hold the baton in front of his body. The outgoing runner takes the baton from his hand as is shown. While this is not as fast a pass as the ones shown above, it is safer because it is easier for the outgoing man to grab a vertical baton. A visual pass of this type is a must in distance running. The outgoing runner starts to move through the zone, looking back as his teammate reaches a point about six to eight yards away from the rear zone line. His speed is governed by the state of fatigue and rate of speed of the incoming man. An ideal pass takes place at mid-zone with the outgoing runner moving as close to race pace as possible.

DICK HILL and LAIRD SLOAN · Captions by DON CANHAM, Univ. of Michigan



ETIC JRNAL FEATURE

THE GENERAL TIRE AND RUBBER CO. Box 951 AKRON, OHIO

7

FOR YOUR BULLETIN BOARD

This feature is arranged so that it may be easily removed from the Athletic Journal without damaging the magazine. Simply open up the staples, lift out the form, and then fold back the staples. Feature No. 4 was The Dribble in Basketball; No. 5, Shooting in Basketball; and No. 6, Volleyball. Additional copies of this feature and the previous features starting with No. 4 can be secured free of charge.

THE TOP BUY IN PHYSICAL EDUCATION UNIFORMS FROM Champion

Complete Phys Ed Uniforms
3 Combinations at
NEW LOW PRICES

CHAMPION'S "Complete Phys Ed Uniforms" are priced lower, and the savings are passed along to you.

Follow the lead of more and more of the nation's colleges and high schools and equip *your* school with top quality, long wearing, perfect laundering Champion Phys Ed Uniforms.

Here are the three standard T-Shirt and Gym Pant combinations.

FEATURING:

- T-Shirts in white and colors.
- Gym Pants in white and colors with our exclusive triple stitched Boxer style elastic waist that's specially treated to be heat resistant.
- Your school design processed in your own school color on both shirt and pant.
- Permanent color processing that will not fade, run or wash out.
- Consecutive numbers incorporated in the design at no extra charge.

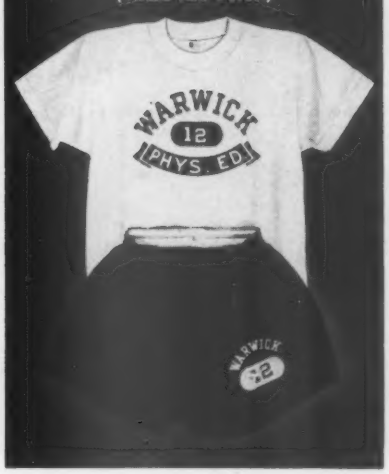
GYM SUIT COMBINATION 1
(All White)

T-Shirt: Style 78QS. Top quality cotton, full cut, ribbed form-fitting neck. WHITE ONLY. Sizes: S-M-L.

Gym Pant: Style KEJ. Full cut, 4 piece "Sanforized" cotton twill. Triple stitched Boxer style waist with heat resistant 1¼" elastic. WHITE ONLY. Sizes: XS-S-M-L.

Complete Price, including shirt and pants processed in your own school color with your own design . . .
$1.60 per uniform

GYM SUIT COMBINATION 2
(White and Colors)



T-Shirt: Style 78QS. White.
Gym Pant: Style KE/8. In following colors all stocked for immedate delivery: Dk. Green, Kelly, Navy, Royal, Maroon, Scarlet, Cardinal, Orange, Purple, Brown, Gray, Black, Gold. Full elastic waist. Sizes: XS-S-M-L.

Complete Price, including shirt and pants processed in your own school color with your own design . . .
$1.65 per uniform

GYM SUIT COMBINATION 3
(All Colors)

T-Shirt: Style 84QS. In following colors —all stocked for immediate delivery: Dk. Green, Orange, Purple, Kelly, Navy, Scarlet, Maroon, Royal, Gray, Black, Gold and Old Gold. Same construction as 78QS. Sizes XS-S-M-L.

Gym Pant: Style KE/8.
Complete Price, including shirt and pants processed in your own school color with your own design . . .
$1.80 per uniform

WRITE FOR 1957 CATALOG

FREE! **GYM SUIT SAMPLE**

Champion will send you a free sample of the T-Shirt and Gym Pant so you can see how a gym suit for your Physical Education classes will look with your design in your school color combination. This sample request must come from the Physical Education department or office. *Please specify design and color when writing for sample.*

PLEASE NOTE—WE HAVE MOVED!

CHAMPION
Knitwear Co., Inc.

OUR NEW ADDRESS

115 COLLEGE AVE., ROCHESTER 7, N. Y.
P.O. BOX 850, ROCHESTER 3, N. Y.

Science Aids Australian Swimmers

BY THOMAS K. CURETON

Director of Physical Fitness Research Laboratory, University of Illinois

WE believe the Australian swimmers were the most completely super-charged, energy-packed group of athletes ever to appear in an Olympiad. Interviews which we conducted with team members, coaches, and scientific advisers indicate this fact. It is ironic, as we reported to the Australian Sports Medical Society in Melbourne the week following the sixteenth Olympiad, that American swimmers were humbled in events they have dominated in the past mainly by techniques copied from the United States, but more consistently applied by the Australians.

Previously published studies on the feeding of wheat germ oil presented evidence of the ergogenic value of the wheat derivatives in the training of American athletes, and we believe it is more than a coincidence that the only United States swimmers to win international acclaim in the 1956 Olympic Games were George Breen, Bill Yorzyk, Shelly Mann, and Nancy Ramey. It will be recalled that Breen set a world's record for the 1,500 meter swim; Yorzyk pumped to victory in the 200 meter butterfly event, and the Misses Mann and Ramey swam one-two in the 100 meter butterfly race.

This quartet of American swimmers included wheat germ oil in their training diet for months prior to the recent Olympics.

In a sense, the Australian athletes, swimmers and others, alike, made scientific feeding a *secret weapon* of their pre-Olympiad training. They put into practice the scientific feeding regimen with no public announcement and the athletes were cautioned not to divulge the secret. However, their secret was public domain in the United States. The Australians learned of it, first, during the Olympic Games in Helsinki in 1952, when we showed Professor Frank Cotton, a University of Sydney physiologist and adviser to Australian athletes, the results of the first two years of experimental results with the wheat derivatives at the University of Illinois physical fitness research laboratory. When Professor Cotton returned home, he recommended wheat germ oil and wheat germ cereal to Australian athletes in coaching panels. Later, we learned from John Morrison, vice president of the Australian Swimming Federation, that all Australian Olympic hopefuls regularly consumed wheat germ. During our visit to Melbourne last fall, Hicks Ive, manager of the Australian team, showed us his supply of the wheat germ oil which he fed to the entire team.

The label on the wheat germ oil bottle read *Trigol* (Abbott Lab., made in Australia) and *Pure cold pressed and refined oil from freshly milled wheat embryo, obtained by a process designed to conserve the vitamin E naturally present in the embryo of the grain.*

Our experiments at the University of Illinois were made with wheat germ oil and wheat germ crystals, products of the Vio-Bin Corporation, Monticello, Illinois, and Kretschmer's wheat germ or cereal, available nationally in grocery stores.

In addition, the members of the Australian swimming team were taking glucose tablets with vitamin B complex, ascorbic acid (vitamin C), vitamin D (Halivol), Oblivon, and Gastrobrom. Some were also taking vitamin E tablets. A few had tried swimming after taking benzedrine. By mobilizing the whole team of boys and girls in the warm country at Townsville, 1000 miles north of Sydney, for five months before the events in Melbourne, such feeding could be kept under control for everybody. Medical advisers were at hand and supervised the benzedrine dosages.

Did the ergogenic supplements help? We were told that Jon Hendricks swam 2:11.8 for the 200 meters before he went on this feeding and then he came down to 2:05. John Devitt did 2:12 before and then came down to 2:07. Terry Gathercole reduced his 200 meter breaststroke time from 2:43 to 2:37. Others also showed marked improvement. Murray Rose, Gary Chapman, Jon Hendricks, and John Devitt swam to a new 800 meter relay world's record of 8:23.6, whipping the American team by 20 yards. Jon Hendricks set a new Olympic record in winning the 100 meters, with a time of 55.4, which was 1.1 second better than the old record. In this event the Australians placed 1, 2, 3; then the girls won 1, 2, 3 places. After Lorraine Crapp had smashed the Olympic record in the 400 meter swim, we asked her if she had taken the wheat germ products regularly. She said, "Oh, yes, we all did." In the week before the races they trebled the dosage.

The most remarkable performer of all was probably Australian, Murray Rose. He is a diabetic, a 100 per cent vegetarian, who uses wheat germ and wheat germ oil to bolster his protein intake. He swam 18:04.1 in his 1500 meter heat, then swam 17:58.9 for the gold medal in the final. He also swam on the 800 meter relay and posted a mark of 4:27.3 for a new Olympic record in the 400 meter swim, to take that title.

In addition to George Breen, who swam to a new world's record in the 1500 meter swim in his heat (17:52.9) and Bill Yorzyk, who established a new Olympic record of 2:18.6 in his heat and swam 2:19.3 in the final for the gold medal, the Canadian team was able to profit from our experiments with wheat germ oil and wheat germ feeding.

Sara Barber, just 15 years old, qualified in the final of the 100 meter backstroke with 1:14.3, which equaled the Olympic record and winning time at Helsinki. Then she swam just the same time in the final. She improved greatly by adding these supplements when we put her on a hard endurance program, breaking six national Canadian records.

Bill Slater, 16 years old, swam 19:47 in July, 1956, then went on the recommended wheat derivative supplements. In the finals of the Olympic Games he swam fifth in 18:38.5, the best any Canadian had ever done.

Three of the Canadian girls qualified in the finals in their events; namely, Virginia Grant, Beth Whittall, and Sara Barber, the latter in both the backstroke and the butterfly. Irene McDonald, the Canadian diver, won third in the springboard dive. This was by far the best any Canadian team had ever done in any Olympiad. It was also our plan to motivate their fitness to the highest possible level.

The Australians started eight years ago to develop their plans for improving their swimming. At London in 1948 they had only John Marshall in the Olympic finals. Their backstroker, Bruce Bourke, came back through the United States, and knowing that we had tested the United States team at Detroit just after the Olympic trials, he carried news of this testing (with his observations) to the Australians.

DR. THOMAS CURETON is well known as a swimming authority, having published over 70 articles and 10 books on the subject. He was in charge of a group appointed by the Australian National Fitness Organization to study Olympic athletes at the recent games in Melbourne. Dr. Cureton is equally widely known for the many scientific studies which have emanated from his physical fitness laboratories at the University of Illinois.

It impressed them and Forbes Carlisle, University of Sydney, set up a testing program. Then they sent several of their best swimmers to the states to be trained: John Marshall to Yale, Rex Aubrey to New Haven Swim Club, John Davies to Michigan, D. G. Agnew to Ohio State, and Dave Hawkins to Harvard. Marshall, Davies, and Aubrey all reached the finals in their events at Helsinki, and John Davies won the 200 meter breaststroke.

Just after the London Olympics, Marsden Campbell toured the United States in the interest of Australian swimming. After interviews with Matt Mann, Bob Kiphuth and others, he visited with us in Urbana for a week, and we helped him draw up a plan for a training chart. This chart was published in Australia in 1949 and also in our own *Beach and Pool* magazine (1949). The chart was posted in every pool in Australia where young swimmers were working out.

According to Hicks Ive, the Australians inaugurated a most rigorous swimmers-training plan for young swimmers, based on time trials and modeled after the training chart. Lacking indoor swimming facilities in Sydney, Melbourne, and Adelaide, they arranged a gymnastics training course using the Kiphuth gymnastics and some techniques recommended by us to Frank Finlay, who also came to see us in Urbana in 1953.

Forbes Carlisle, who has been a lecturer in physiology at the University of Sydney for several years, went to Townsville to carry on scientific testing and analysis of the physical fitness of the swimmers. Incidentally, he made an interesting report to the World Congress of Physical Education, in Melbourne, on his method of testing the swimmers to keep them from going stale. Some could take a great deal of work with no relapse but others, like the breast stroker, Terry Gathercole, could not. We talked with Gathercole at length and he was sure the method had helped him.

The method of testing consisted of taking pulse counts after each training swim, for 10 seconds, at the start of each of four minutes. Relatively low pulse counts indicate physiological cost. If the pulse counts became higher after being lower on previous occasions, the cause of the poor condition was probed. In certain cases more rest was given and the work load diminished.

Charles Silvia, coach of Bill Yorzyk, Jim Counsilman, coach of George Breen, and I talked with several of the Australian coaches. They had regularly taught the deep catch (short entry) type of crawl arm stroke, having read about it in this country some years ago.[1] Their crawl swimmers exhibited this style much more uniformly than did the Americans. They freely admitted that what they knew, they learned from American publications. We found them quoting things we had put in the literature many years ago.[2,3] No new styles evolved. All had good kicks except Murray Rose, who had a slightly irregular kick. When he breathed, the leg on the opposite side to the head turn

[1] Cureton, T. K., "Mechanics and Kinesiolgy of the Crawl Arm Stroke," *Beach and Pool*, 4: 57-62, (May, 1930).

[2] _____, "Factors Governing Success in Competitive Swimming," *Spalding's Intercollegiate Swimming Guide*, pp. 48-62, New York: American Sports Publishing Co., 1934: also, *Swimming Pool Data and Reference Annual*, pp. 49-55, 1936.

[3] R. J. H. Kiphuth, *Swimming*, London: Nicholas Kaye, 1949, pp. 116.

FIRST IN THE HANDS OF THE CHAMPS

HANK AARON
National League
Batting Champion uses and
endorses Louisville Slugger Bats

MICKEY MANTLE
American League
Batting Champion uses and
endorses Louisville Slugger Bats

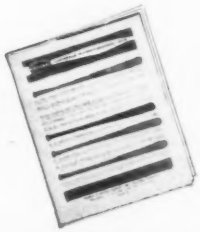
THERE'S A LOUISVILLE SLUGGER BAT FOR EVERY BASEBALL AND SOFTBALL NEED:

Regardless of your requirements, be they Softball or Baseball, you'll find in the Louisville Slugger line just the bat or bats you are looking for. Each year the Louisville Slugger bat line is changed to meet the needs of coaches and players.

And, of course, there's no substitute for the confidence players feel when they step up to the plate with a genuine Louisville Slugger!

HILLERICH & BRADSBY COMPANY, Louisville, Kentucky

LOUISVILLE SLUGGER
HILLERICH & BRADSBY Co
LOUISVILLE, KY.



We will be glad to send you copies of the 1957 Louisville Slugger Bat and Grand Slam Golf Club Catalogs for your ready reference in ordering from your dealer. Address Hillerich & Bradsby Company, Dept. AJ-7.

LOUISVILLE SLUGGER BATS

Also makers of Louisville Grand Slam Golf Clubs

For further information see Service Coupon, page 72

THESE sturdy hurdles are made of steel with a crossbar of beveled No. 1 fir. The automatic inside adjustment permits raising or lowering merely by pulling up slightly or pushing down. In addition, the hurdle carries at all heights from 30 to 42 inches. There are no protrudding parts and the steel is zinc-chromate plated to resist rust. The shipping weight is 15 lbs. and the price is $13.95. Economy Track Equipment Co., 1824 Newark Ave., S.E., Grand Rapids, Mich.

A BRAND-NEW development in basketball shoes is to be found in these "Golden Basketeers" in the form of a nylon mesh insert for coolness and breathability. In addition, there is the patented self-cleaning squeegee action molded sole and the famous "Arch-Gard" triple cushion support at the heel, longitudinal, and metatarsal arches. The shoes come in high-grade white duck with golden trim and are sold exclusively in sporting goods stores. Mishawaka Rubber and Woolen Mfg. Co., Mishawaka, Ind.

MADE of rugged, weatherproof cast aluminum, these markers are designed for marking the landing point of the shot, discus, and javelin. The markers have an integral spike and convenient finger grip for quick placement or removal from the ground. The numbers are stenciled on the marker. Incidentally, these markers are ideal for golf tee markers. The markers are $1.00 each, with quantity discounts on one dozen or more. Ball and Hale, 1526 Greenmount Ave., Pittsburgh 16, Pa.

ONE of the greatest advances to be found in mitt design is incorporated in this new "Roy Campanella" model catcher's mitt. The "snap action" construction permits the catcher to flex his mitt easily and quickly. The design offers a deep cup pocket controlled by hinge movement. Another feature is the palm lacing which stabilizes the padding in its proper position, and because it is adjustable the padding can be formed to the player's preference. Wilson Sporting Goods Company, River Grove, Ill.

"ANTI-FUNGAL SPRAY" contains a-Carboxthioanisole which stops fungus growth and prevents formation of new fungi. It is also an anti-perspirant and will greatly reduce sweating of the feet. Since fungi need moisture to thrive, this principle helps to prohibit the growth of the fungi. It penetrates the skin to reach deep infections and will cause the sloughing off of old, infected skin, so that the preparation can reach all of the fungi. This exclusive ingredient is also used in "Bike Foot and Body Powder." For a free sample of the powder check the Service Coupon. Bike Web Co., 309 W. Jackson Blvd., Chicago 6, Ill.

did not kick well. Compared to Breen's *broken windmill flail* all of the Australians swam very smoothly and very economically. Apparently they have not thoroughly mastered the butterfly, as this was the one event they failed to dominate.

Warm-up is considered very important by the best swimmers. Bill Yorzyk typified this trend. He warmed up with 20 laps plus four 50 meter sprints the morning of his final; then swam ten 50 meter warm-ups about 30 minutes before his title winning race. The Australians warmed-up in much the same manner. Hot showers were also generally used before the races.

The amazing performance of Australian swimmers in the 1956 Olympiad impresses upon us that new concepts in physical training techniques and coaching methods must be recognized. These concepts embrace training the athlete for endurance, regardless of his event, and adding wheat derivatives and other nutritive supplements to his diet for an *endurance plus*. We are convinced that wheat derivatives, for example, help us to better utilize our carbohydrates – the energy foods. In other studies, we have shown that endurance is a prime factor in fast-time swimming performance.[5]

Scientific tests show that even the world's champion in the 100 meter swim will slow down in the latter half of the race, the slow-down being proportionate to his staying power. The same would apply to other types of athletic events, as indicated by the fact that Americans have always dominated in Olympic track events of skill, while athletes from other lands have won the grueling grinds. The latter, traditionally, have worked for endurance on a year-around basis. We can cite the swimming form of George Breen to bring our point into focus. As we pointed out, Breen swims like a *broken windmill*. His utter disregard of orthodox form and waste of energy are appalling. But he has the endurance – the staying power – to establish world's records in the most grueling of swimming events.

[4]F. S. Cotton, "On the Degree of Accuracy Obtainable in Counting the Pulse Rate for Short Periods of Time," *The Australian Journal of Experimental Biology and Medical Science*, 5: 101, 1928. Also, "On the Occurrence of a Post-Exercise Trough in the Pulse Rate," Ibid., 5: 111, 1928. Also, F. S. Cotton and D. B. Dill, "On the Relation Between the Heart Rate During Exercise and that in the Immediate Post-Exercise Period," *American Journal of Physiology*, 3: No. 3, April, 1935.

[5]T. K. Cureton, "Test for Endurance in Speed Swimming," *Supplement to the Research Quarterly*, 6: 113-119, (May, 1935).

New Books

Easy Steps To Safe Swimming, *by Evelyn McAllister. Published by Artcraft Press, Cortland, N. Y. Sixty pages. Price* $1.25. *Publication date January. Received for review Jan.* 5.

Mrs. McAllister has spent fifteen years teaching swimming in camps, schools, Y.W.C.A.'s, and has served as a lifeguard at public beaches. During that time she has analyzed the methods used in teaching swimming, and in this booklet describes the methods which have appealed to the majority of swimmers.

The author makes use of numerous drawings and concise captions. We feel that this booklet would make an excellent text for assigned reading work in connection with beginning swimming classes.

Archie's Little Black Book, *by H. Archie Richardson. Published by Rich-Burn Co., 1234 N. Formosa Ave., Hollywood* 46, *Calif. Ninety pages. Price* $1.10. *Publication date Feb.* 5. *Received for review Feb.* 5.

In 1953 the author compiled his now famous track and field record book. Since that time there have been three revisions, and this year's work which is entitled the *Fifth Anniversary Edition.*

The book is much more than a record book—it is a source book for track and field information. In addition, it offers many inspirations for young track and field hopefuls.

Frankly, we cannot think of a better way of increasing interest in track than by making copies of this book available for the students of your school. It will do a job—we guarantee.

International Track and Field Digest, *edited by Don Canham and Phil Diamond. Published by Champions on Film,* 816 *South State St., Ann Arbor, Mich. Two hundred and fifty-six pages. Price* $5.00. *Publication date Feb.* 1. *Received for review Feb.* 4.

The first International Track and Field Coaches' Clinic was held at Berkeley, California, for nine days last June. This book contains the word-by-word transcription of the forty-nine lectures. The lectures were presented by the elite of the track coaching world and include comprehensive insights into every phase of track and field.

In editing the book, the two editors made extensive use of pictures which were obtained from a number of sources. We are proud to say that the *Athletic Journal* supplied the largest number of pictures, the most recent being those of Bobby Morrow which appeared in our December issue.

The proceeds from the sale of this excellent digest are being turned over to the National Collegiate Track and Field Coaches' Association to serve as an impetus for a second international clinic to be held in Rome in 1960.

Living Safely, *by Roy Stewart. Published by Burgess Publishing Co., Minneapolis* 15, *Minn. One hundred and one large-size pages. Price* $3.00. *Publication date Jan.* 27. *Received for review Jan.* 28.

The author is head of the Department of Health and Physical Education at Murray, Kentucky, State College.

In this spiral-bound book, Roy Stewart discusses the need for safety, the psychology of living safely, the motor vehicle, safety at school and at home, safety on the job, public accidents, and survival under atomic attack. The book concludes with a number of inspection sheets for school shops, auditoriums, gymnasiums, school busses, etc.

Integrated Anatomy and Physiology, *by Carl Francis and Gordon Farrell. Published by C. V. Mosby Co., St. Louis* 3, *Mo. Six hundred and forty-one pages. Price* $5.85. *Publication date January,* 1957. *Received for review Jan.* 30.

This is the third edition of this highly popular textbook, previous editions having appeared in 1943 and 1950. In the present edition new chapters have been added and the sections on physiology have been rewritten.

Archery, *by Howard Wiseman and Fred Brundle. Published in the U.S.A. by Dover Publications, New York* 10, *N. Y. One hundred and twelve pages. Price* 65 *cents. Received for review Jan.* 14.

Primarily, the book is a handbook of archery in Britain, and as such devotes considerable space to listings of British archery clubs and organizations. However, the technical aspects of the book are excellent and for that reason it deserves a place in school libraries.

The Art of Officiating Sports, *by John W. Bunn. Published by Prentice-Hall, Inc., Englewood Cliffs, N. J. Three hundred and eighty-eight pages. Price* $6.35. *Publication date Feb.* 20. *Received for review Feb.* 20.

This is the second edition of a book which we consider to be the finest there is on the subject of officiating. The qualifications of the official and the specific requirements for each sport are described. At the bottom of each page is a short reminder such as "Clear signals educate the spectators." This is an excellent book written by a highly respected member of the coaching profession. It contains more than 100 illustrations, diagrams, and forms.

NEW FILMS

How to Play Hockey, 16*mm sound. Distributed by American Hockey Coaches' Association, c/o Eddie Jeremiah, Secretary, Hanover, N. H.*

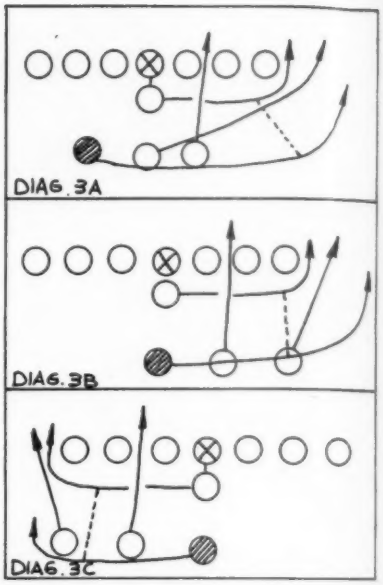
Just recently this film was produced in Canada and the American Hockey Coaches' Association was selected as sole distributor. There are eight reels on the basic fundamentals of Skating, Stick Handling, Passing, Checking, Shooting, Goal Tending, Offensive Team Play, and Defensive Team Play.

Slide Series

(Continued from page 7)

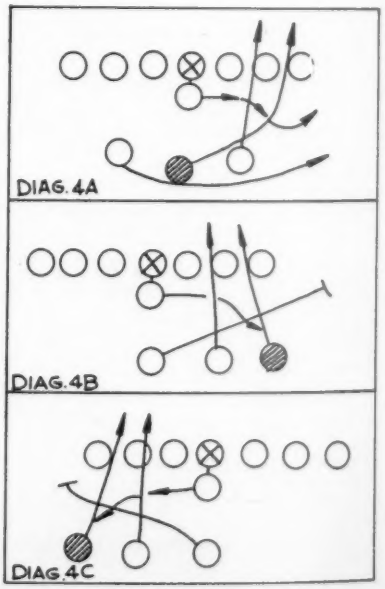
back turns to hand to the off-side halfback, who has faked to the right or left, depending on the play. Once again, the on-side halfback sprints downfield to get into position for a block.

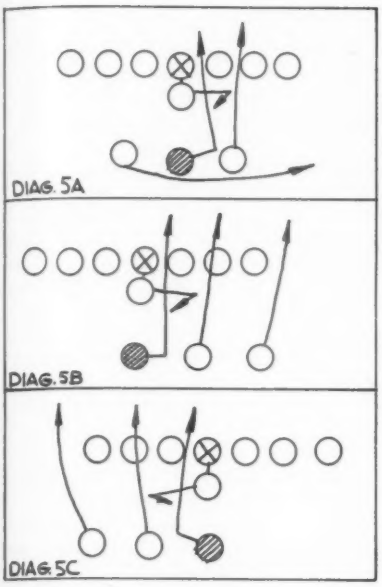
In this series, when the quarterback fakes the dive out and comes back up through the middle, the play develops the same as it does in the regular split T. The only variation is

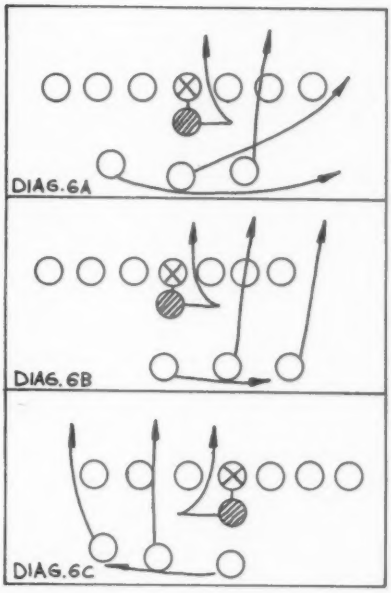


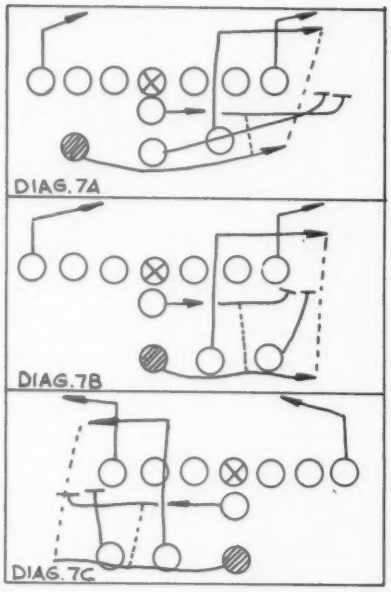
the fake dive to the fullback instead of to the on-side halfback. The on-side halfback goes downfield once again as the off-side halfback fakes around the end. Diagrams 6A, 6B, and 6C show the variations.

As shown in Diagrams 7A, 7B, and 7C, the option pass may function as smoothly from the slide series as it does from the straight split T. In the slide series the fullback replaces the on-side halfback as he dives and breaks to the outside for the shallow pass. The on-side halfback protects the passer as does the quarterback after he has pitched to the off-side halfback. Then the ends follow their









usual pattern—on-side end, down and out; off-side end, down and in.

We have shown only the straight split T plays to the right. Naturally, the same plays may be run to the left but since they are merely diametrically opposite there is no need for us to repeat ourselves.

There are other fundamental plays which may be worked into a split T attack, but we believe most of them have been covered. The coach may introduce other variations to this slide series with only slight adjustments in his backfield assignments.

All in all, we have found this variation of the split T a valuable addition to our offensive repertoire. At the same time, we believe the added burden of offensive assignments has been kept to a minimum.

Percentage Baseball

(Continued from page 24)

on second and third, first and third or when the bases are full. In these situations, the defensive team tries to prevent a big inning on the part of the offensive team. However, ground balls hit to the pitcher, third baseman or first baseman are frequently played to the plate, unless, with runners on first and third and one out, a double play via second to first is obtainable.

If the team on defense is behind in the early part of the game, the infield usually plays in when a runner is on third base and there are less than two outs. In this situation, the defensive team cannot afford to give up another run. The infield plays in or back when runners are on second and third bases, depending upon the batter and the closeness of the score. If runners are on first and third with no outs, and the defensive team is one run behind, the infield may play in or may play for the double play, depending upon the defensive team's ability to score runs. Usually, the second baseman and shortstop play for the double play. If there is one out with runners on first and third, the infield plays at double play depth. If the bases are full with no outs, the infield plays in the same fashion as it does when runners are on first and third. If the bases are full with one out, the infield plays for a double play.

In the middle of the game (third through sixth innings), the infield plays in, with less than two outs, if a runner is on third base and the score is even. With runners on second and third bases, the infield plays in a few feet in order to hold the runner on third on sharply hit balls. When runners are on first and third with no outs, the shortstop and the second baseman usually play for the double play while the first baseman and third baseman frequently play for the runner attempting to score. If there is one out when runners are on first and third, the infield usually plays for the double play. When the bases are full, with no outs, the infield plays in the same fashion as it does when there are runners on first and third bases. When the bases are full with one out, the infield plays in the same fashion as it does in the early part of the game.

With less than two outs in the middle part of the game, the first and third basemen play in and the shortstop and second baseman play back if a runner is on third base and the defensive team is one run ahead. With runners on second and third bases, the infield plays back. In this situation, if it is possible, the defensive team should not allow the lead run to score. With runners on first and third bases, the infield plays for the double play, regardless of the number of outs. The defensive team, in this situation, tries to prevent the lead run from advancing to a scoring position. With the bases full, the infield plays for the double play. Here again, the defensive team tries to prevent the lead run from scoring. If the ball is hit to the pitcher or the first and third basemen, it is usually thrown home and the catcher completes the attempted double play by relaying the ball to first base.

If the defensive team is two runs ahead at the middle of the game, the infield plays deep if a runner is on third base, regardless of the number of outs. The defensive team, in this situation, can afford to give a run to

get out of the inning without further damage. With runners on first and third bases or with the bases full, the infield plays for the double play.

If the defensive team is behind at the middle of the game, the infield plays in with less than two outs, if a runner is on third base. In this situation, the defensive team cannot afford to give the opposition another run. If, with less than two outs, runners are on second and third bases, the infield moves in some distance for a possible play at the plate. When runners are on first and third bases with no outs, the infield, more often than not, plays in. When runners are on first and third bases with one out, the infield plays for the double play. However, on a slowly hit ground ball, the throw is often made to the plate because, in this case, a double play is almost impossible. When the bases are full with no outs, the infield moves in some distance and makes the play at home. Since the play at home is a force play and not a tag play, the infield may play a little farther back, permitting better coverage. When the bases are full with one out, the first and third basemen play in for a play at the plate and, possibly, a double play from home to first. The shortstop and second baseman, in this situation, play for the double play from second to first, providing a double play ball is hit.

With less than two outs in the latter part of the game (sixth through eighth innings), the infield plays in if the score is tied and a runner is on third base. In this situation, the game is near the end and one run is important. With runners on second and third, the infield plays in a few feet. With one out, when runners are on first and third, the infield plays at double play depth. On sharply batted balls hit directly toward a fielder or toward second base of the fielder, the double play is attempted. On slowly hit balls or on balls hit away from second base, the play is made to the plate, providing there is a chance to get the runner attempting to score. However, the ability of the infield in executing double plays must be considered. If the infield is not dependable in the execution of a double play, it plays in. With the bases full and no outs, the infield plays in a few feet. With the bases full and one out, the first and third basemen play in for a play at the plate and, possibly, a double play from home to first. The shortstop and second baseman, in this situation, play for the double play from second to first. However, here again the abilities of the second baseman and shortstop in executing double plays have to be considered. If the second baseman and the shortstop are not dependable in the execution of a double play, they should also play in.

When the defensive team is leading by one run in the latter part of the game, the infield, with less than two outs, plays in if a runner is on third base. When runners are on second and third bases, the infield may play a few feet in or may play deep. If a dangerous batter is at bat, the infield should play deep, providing an intentional pass is not given. If a weak batter is at bat, the infield plays a few feet in. However, if the defensive team is the home team, the infield usually plays back and plays for a tie. Remember, a base hit in this situation not only scores the tying run, but also scores the lead run.

When runners are on first and third with no outs, the defensive team may move in considerably or may play at double play depth, depending upon the ability of the defense to involve the offense in a double play. If a good batter is at bat, the infield plays for

the double play. Also, if the defensive team is the home team, the infield usually plays for the double play. If a poor batter is at bat, the defensive team may play in or partly in. With a poor batter at bat, the first and third basemen play the ball to the plate while the second baseman and shortstop play for the double play or to the plate, depending on which team is the home team. Since the home team has the last turn at bat, it can afford to play for a tie and, consequently, go for the double play. When runners are on first and third bases with one out, the infield plays back and usually goes for the double play. The infield also plays at double play depth when there are no outs with the bases full. However, a ground ball to the pitcher or to the first baseman or third baseman is played home and then, possibly, to first. When the bases are full with one out, the infield plays for the double play.

When the defensive team is leading by two runs in the latter part of the game, the infield should play deep in all situations. The defense should try to prevent a second run from scoring rather than worry about one run.

If the defensive team is behind in the latter part of the game, the infield plays in, with less than two outs, if a runner is on third base or if runners are on second and third bases. When runners are on first and third bases with no outs, the infield again plays in. When runners are on first and third with one out, the infield plays for the double play, providing it is capable of executing a double play. However, if a slow ground ball is hit, then the play is usually made to the plate instead of to second base, providing the ball is not hit too slowly. When the bases are full with no outs, the infield plays in. When the bases are full with one out, the first and third basemen play in and the second baseman and shortstop play for the double play from second to first, if possible.

With less than two outs in the first of the ninth inning, the infield plays in if the score is tied and a runner is on third base. With runners on second and third bases, the infield plays in. With runners on first and third bases, the infield plays in if there are no outs. With one out and runners on first and third, the infield moves in some distance and plays for the double play, if possible. If the defensive team has a good double play combination or if the batter is not too fast, the shortstop and the second baseman may play at double play depth. The first baseman and the third baseman play in but they also play for the double play on hard hit balls. When the bases are full with no outs, the infield plays in. When the bases are full with one out, the infield plays in the same fashion as it does when runners are on first and third except that the first and third basemen, as well as the pitcher, make the play to home plate in most cases.

With less than two outs in the top half of the ninth inning, the infield plays in if the defensive team is one run ahead and a runner is on third base. With runners on second and third bases, the infield plays in a few steps and makes the play to the plate if the ball is hit sharply. When runners are on first and third bases with no outs, the infield plays in a few steps and tries to hold the runner on third. When runners are on first and third bases with one out, the infield usually plays for the double play. When the bases are full with no outs, the infield usually moves in a few feet, depending a great deal upon the ability of the batter. When the bases are full with one out, the second baseman and the shortstop usually play back at double play depth. In this situation, the first and third basemen play in a few feet.

If the defensive team is ahead by two runs in the top half of the ninth inning, the infield plays deep in all situations.

If the defensive team is behind in the top half of the ninth inning, the infield plays in if there are less than two outs and a runner is on third. If runners are on second and third bases, the infield plays in. If runners are on first and third with no outs, the infield plays in. If runners are on first and third with one out, the infield moves in some distance but usually goes for the double play, depending upon the infield's skill. If the bases are full with no outs, the infield plays in. If the bases are full with one out, the infield plays in about the same positions as it does when there are runners on first and third.

With less than two outs in the last half of the ninth inning, the infield must play in if a runner is on third base and the score is tied. The infield must also play in if runners are on second and third with less than two outs, if there are runners on first and third with no outs or if the bases are full with no outs. The infield also moves in if runners are on first and third with one out or if the bases are full with one out. A very good defensive team may go for the double play in the latter situations. However, even though a team is going for a double play, it must move in a considerable distance to make sure of the play.

With less than two outs in the last half of the ninth inning, the infield plays in if the defensive team is one run ahead and a runner is on third base. With runners on second and third bases, the infield plays in a few feet. With runners on first and third bases, the infield plays in if there are no outs. If runners are on first and third with one out, the infield moves in some distance but plays for the double play. If the bases are full with no outs, the shortstop and second baseman play at double play depth while the first and third basemen play in. If the bases are full with one out, the infield plays at double play depth.

In all the hypothetical situations explained previously, the infield, of course, plays deep when there are two outs. It should also be understood that by playing in, the infield does not necessarily follow through with a play at the plate. The fact that the infield plays in often holds the runner on third base. In other words, the runner on third may not try to score. If the runner on third makes no attempt to score, the fielder goes for a force play (possibly a double play) if a runner is also on first or he plays the ball to first base to get the batter-runner. If, after holding the runner at third base, the fielder has doubt about getting a force-out, he should make the play to first.

It should be emphasized that the strategy of a certain situation depends upon many factors. The ability of the defensive team's pitcher, the skill of the defensive team's infielders, and the abilities of the opposition must all be considered in addition to the score, inning, number of outs, and number of runners on bases. In addition, the count on the batter must also be considered. If the batter gets the pitcher in the *hole* with the bases full, an infield that might be playing in can expect a hard driven ball and, consequently, might be better off backing up a few feet. On the other hand, when runners are on first and third with one out and the count three and one or three and two on the batter, the infield is almost required to move in some distance. In this situation, the runner on first is very likely to go with the pitch, eliminating many chances for a ground ball double play. Then the shortstop and second baseman play for the double play only if the ball is ideally hit for a double play. If the ball is hit with medium speed or toward first and third bases, the shortstop and the second baseman must make a fast play to the plate, providing the runner on third attempts to score. In this latter situation, if the runner does not attempt to score, the play, of course, is made to first.

Multiple Offense

(Continued from page 34)

the single wing or T styles of attack. In a small school it is very difficult to scrimmage with the reserve team and simulate the opponents' plays because there is too much difference in personnel. In order to have successful scrimmages it is necessary to shift some linemen to defense; therefore, why not play an offense that will prepare the team defensively in scrimmage against almost any type of offense it will meet during the season.

3. The third advantage a multiple offense gives is player morale. Nothing is more disheartening to a team than to have its basic plays stopped cold. Our best ground-gaining play from the single wing has been the tailback off-tackle on a half spinner. When this play has been stopped, we have been able to hit the same hole using a belly series from the winged

RAY JOHNSON graduated from Montana State College where he competed in football and basketball, winning all-conference honors in the latter sport. He is assisted by Wayne Wilkins, a graduate of Valley City, N. Dak., State Teachers College. In their three years at Fairview, the number of boys out for football has increased from 19 to 39, and this past season the team was undefeated, winning the Eastern Division Class B Championship.

T. This play hits faster and offers more deception. At times, our whole unbalanced line attack has bogged down, and the split T plays have forced the defense into making mistakes which have enabled us to move the ball.

In our three years at Fairview we have been unable to score in only one game when our team was using the multiple offense.

Baseball Practice

(Continued from page 20)

It is easy to see that this drill serves a double purpose. Not only is the player doing his running, but he is practicing catching flies as well. He receives more pleasure from doing this drill than he does from running laps or wind sprints.

The workout we have outlined should be used daily until the team is ready to play—in our case, about two weeks. Then Monday, Wednesday, and Friday of each week can be reserved for practice and Tuesday, Thursday, and Saturday can be devoted to full-scale scrimmage games. These games should last at least two hours and the coach should try to get in a full nine innings each time.

It should be borne in mind that the workout we have outlined is not to be followed word-for-word, day in and day out. Building a winning team depends just as much on a coach's good judgment as having a player running by a clock.

A coach can see where his team is weak and he should arrange his practices to correct those weaknesses.

The whole secret in winning is to keep the player doing what he is on the field to do—play baseball. The players like the game and if the coach keeps them enjoying it, he will find that his boys will be hard to defeat.

From Here and There

(Continued from page 4)

ing position. While coaching at Alpena, Michigan, High School, Devany's teams won 52 games out of 61 played over a nine-year period . . . Coach Jack Holley of Ringgold, Louisiana, High School, wrote us after reading the article, "Player-Guest Plan Can Slash Athletic Budgets," in the January issue, that they had used the plan for several years and had made trips to Nacogdoches, Dallas, Avinger, Canyon, and Muleshoe, Texas; Hobbs, Carlsbad, Albuquerque, and Gallup, New Mexico; Jasper, Alabama; Harlan, Kentucky; and Charlotte and Gastonia, North Carolina. He concludes by saying, "We like to visit other states and are interested in promoting our plan so that teams from other states will visit us."

Shot Put Technique

(Continued from page 14)

exerted in the direction of the put for a maximum performance, and any effort which is not along the line of movement is wasted.

During the course of the delivery the following movements are executed rapidly, thus giving continued propulsion to the shot:

1. A pivot counterclockwise on the ball of the right foot coupled with an extension and outward rotation of the right thigh. This thigh rotation starts the rotatory movement and drives the athlete's right hip up and forward, thereby aligning his trunk with his right leg.
2. Extension, left abduction, and a twist of the trunk to the left. The twist of the trunk is a continuation of the rotation of the putter's right leg.
3. An upward and forward thrust of the right shoulder which is a continuation of the trunk action.
4. A forceful push of the right arm upward and forward which is a continuation of the trunk action.
5. Flexion of the right wrist, extension of the feet, and flexion of the toes of both feet. The action of the left leg and foot is simultaneous with that of the wrist and adds power to the put.
6. Flexion of the fingers as the shot is released.

The athlete's left knee is extended while his thigh is rotated inward during the delivery. This action aids in transferring forward momentum upward.

His head is held up and his eyes are focused in the line of release.

During the delivery the putter's elbow and forearm should be kept directly behind the shot in order to obtain maximum results from the muscles of his right shoulder, arm, and wrist. His elbow should be relatively low to be in a mechanically stronger pushing position.

As the shot rolls up the athlete's fingers for the release, there is a snappy flexion of his wrist, followed by the flexion of his fingers as the shot becomes airborne.

Upon completion of the vigorous extension of his right leg and coincident with his right arm extension, the putter's body weight is transferred to his left leg. Then his left leg is vigorously extended, adding additional impetus to the shot immediately prior to the release.

His feet should not leave the ground until the shot has been released.

Reversal or Recovery. The driving forward action of the athlete's body in the direction of the put necessitates a quick step with his right foot against the toeboard. Then his body weight is supported entirely by his right leg. As his trunk flexes forward over his right leg, the putter's left leg is swung backward and sideward.

His left arm remains partially flexed, while his right arm moves along his right leg. The athlete's head and eyes should be kept up. Some light, controlled bouncing on his right foot will aid in regaining balance.

The reversal or recovery enables the athlete to recover body balance and prevent fouling *after* the release. However, the reverse *should not* be executed until the shot has been released.

The basic advantages of the modern shot put technique seem to be:

1. The stance in which the athlete's body faces to the rear of the ring has enabled putters using this technique to apply force to the shot over a longer distance and for a longer period of time.
2. A more powerful putting position is obtained for the delivery.
3. Greater speed is achieved.

In the light of these very important advantages, it would seem that the modern technique of putting the shot should be used to obtain the greatest results.

Place Kicking

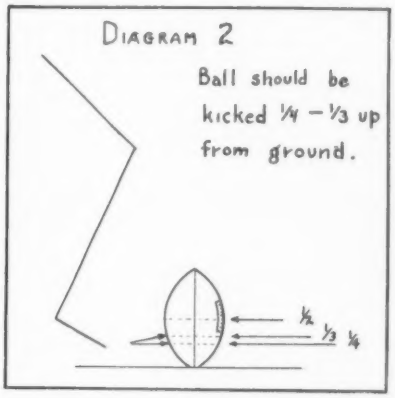
(Continued from page 32)

placed on the honor roll on the bulletin board. Since the boys pass this board each gymnasium period, it serves as a fine motivating device. We also announce the names of the boys who had perfect scores to each class.

In teaching a boy to kick, a two-step method is used. The steps can be increased for the distance desired, but the last two, or the basic steps, are always involved.

A right-footed kicker is instructed to start with his feet together, step forward with his right foot, step with his left foot, bringing his left toe on a line with the center of the short axis of the ball. The idea of placing the non-kicking foot close enough in line with the ball is the most common fault in the case of young kickers and must be stressed at each practice session (Diagram 1). We try to teach the boy to concentrate on his non-kicking foot rather than the kicking foot, placing it (left foot) next to the ball correctly to facilitate hitting the ball with his right foot in the proper place. Depending on the distance or height desired, the kicker moves his left foot backward or forward in relation to the short axis of the ball.

The approach must be smooth, with the knee of the kicking leg relaxed and bent on approach, and finally locking after contact has been made with the ball and finishing with a good follow-through. As the left (non-kicking) foot is placed next to and in line with the ball, the kicker's knee is bent slightly and his body leans to the rear, thus delivering the weight of his body through the kicking foot. As the impact is made, his arms are raised for balance. Striking the ball in the proper spot is another one of the more important phases of place kicking. We feel the optimum spot on the ball for place kicks should be between one fourth and one third of the ball from the ground up. Chalk marks on a ball plus blackboard diagrams (Diagram 2) are used to teach this phase of the kick.

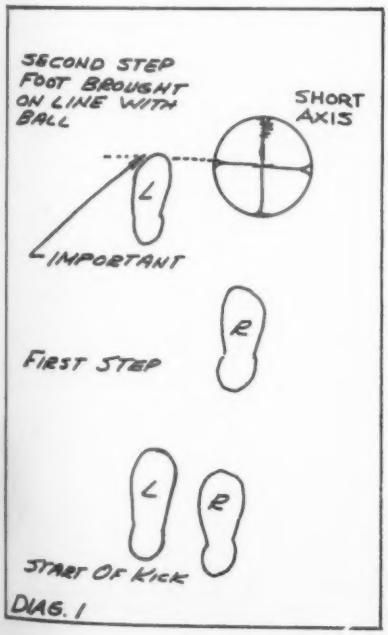


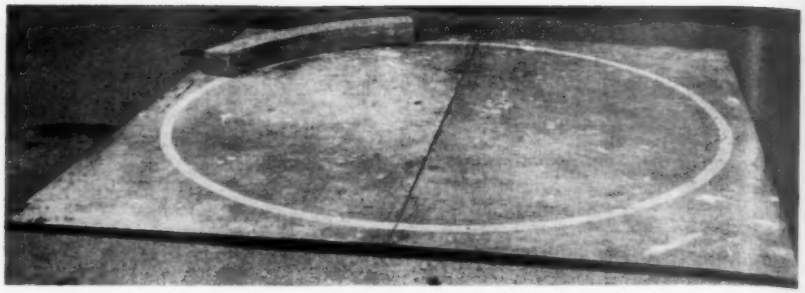
In addition to the important factors mentioned previously, the kicker should be taught to keep his head down, watch the ball, and concentrate on hitting the ball in the right spot.

The boy who is holding the ball is instrumental in the success of the kick. He should hold the ball with one finger in an upright or slightly tilting position. The position of his finger should be held until the kick has been made. In this way the ball cannot fall aside, thus resulting in a poor kick.

Our boys are becoming interested in place kicking, and we find them trying for field goals on their own initiative and in their spare time. This is a gratifying indication of their increased interest, and it results in a noticeable improvement in their kicking technique.

As a result of our emphasis on this fundamental and important phase of football, our boys will be earning their letters and playing on more football teams throughout the country.





A Portable Throw Board

BY W. J. BOWERMAN
Track Coach, University of Oregon

ONE of the track coach's many duties is to see that the throwing surface for the shot and discus is prepared and maintained.

Many schools have enjoyed success with asphalt, cement or concrete throwing surfaces. We have three objections: They are too hard. They tend to slip when wet. A permanent ring cannot be put down in a field used for football.

After trying many things, we found that the portable throw or putting board comes the nearest to being perfect, all things considered.

Advantages of the portable throw board are: 1. The throwing surface is always the same, whether it is wet or dry, or for the first or last competitor. 2. It is fast and nonskid. 3. It is portable and can be used anywhere.

In our opinion, the disadvantages of this board are:

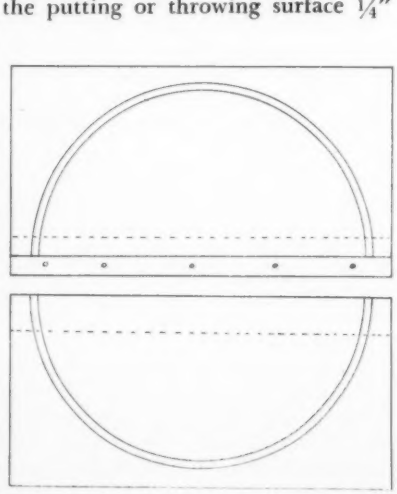
1. The rules state that the ring shall be flush with the ground, and the putting or throwing surface ¼" below ground surface. It must be pointed out that at one time the rules required the hammer to be thrown from a ring flush with the ground. Now the rules permit an elevation not to exceed 3 inches above floor level.

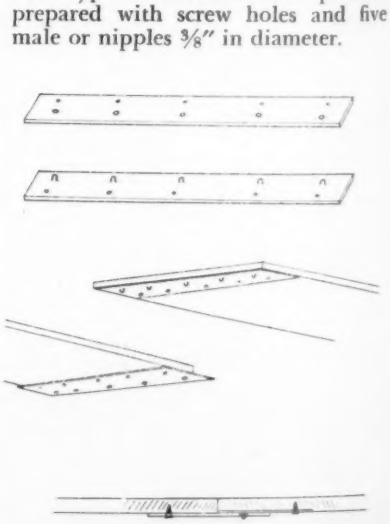
2. Spikes do not work well. It should also be mentioned that spikes do not work well on any concrete surface. In addition, most athletes in the 1956 Olympic Games used rubber soles.

The following materials are necessary for the construction of a throw board:

1. Two pieces of plywood 5' x 10' x ¾" to 1¼" in thickness. Our experimental boards were made from *press boards* used in plywood manufacture.

2. Two pieces of strap metal 10' x 4' x ⅛". One piece is prepared with screw holes and five female or insert holes ¼" in diameter. One piece is prepared with screw holes and five male or nipples ⅜" in diameter.





3. A five gallon can of industrial paint of the type that is used in preparing wooden and metal ramps for a nonskid surface. We used *Pabco* grip deck.

In the beginning, we recommend waterproofing the board with varnish. Then the grip deck is thinned and colored, if desired. The paint is applied in one or more coats.

One of the 4-inch metal straps has screw holes in one 2-inch segment. The five ¼" insert holes are bored in the other 2-inch segment. The other 4-inch metal strap has screw holes in one 2-inch segment and ⅜" nipples welded at a position which corresponds to the insert of the other strap. These straps are fastened to the boards. A ring is painted on for the discus, and when the board is placed on the ground the practice or competition may begin.

Preparation for the shot is the same; however, the toeboard is fastened to the ring with angle iron.

It has been our experience that a board will last a full year. In the event an athlete becomes careless and drops a shot on the board, it can be touched up quickly with grip deck.

In the Pacific Northwest our practice and competition all take place during the spring. We feel we have *whipped* the rain.

This ring can be placed where the spectators can see the event, and where the athlete may be stimulated by the presence of a crowd of people. We have used the ring in dual meet competition; in northern division championships, where four of the six finalists preferred the board to clay; and in the Pacific Coast Conference Meet where all finalists exceeded their best puts of the season.

A Practice Crossbar

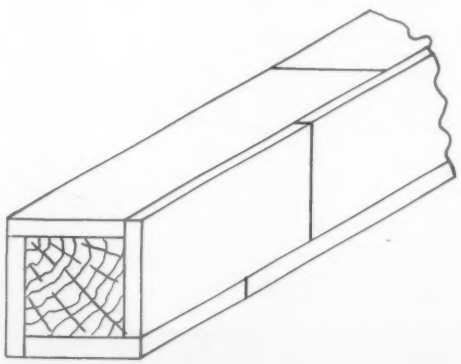
BY JAMES E. DOYLE

Track Coach, Cambridge, Illinois, Grade School

BREAKAGE of high jump and pole vault crossbars has always presented a problem for track coaches, especially in the smaller schools that operate on a limited budget. In our local grade school we have used a practice bar made by high school industrial arts students. This bar has withstood many jolts that would snap or crack a bar made of ordinary wood.

The first step in the construction of this bar is to secure a 12-foot length of white pine, free of knots, and rip it into strips approximately three-quarters of an inch square. Then we take a one-quarter inch sheet of masonite, 8 feet long, and rip it lengthwise into 1-inch strips. These 1-inch strips are glued to the bar and held in place with small brads until the glue sets. Care must be taken in applying the masonite in order to insure a staggering of the masonite seams which will increase the strength of the bar. If untreated masonite is used, it should be shellacked or varnished to protect it from the weather.

The cost of the material for each bar is approximately $1.00. If used under normal jumping conditions, these bars will more than pay for themselves. This type of bar was used first by grade school students and withstood approximately 4,000 jumps.



Batting Styles

(Continued from page 9)

ments of batting so that he can determine good from bad, and correct techniques from incorrect ones. He should concentrate on the common denominators of good batting. The player must be alert to peculiarities in batting styles and study them carefully before trying to adopt them.

Young players should not be fooled by an attractive batting average. It took years of hard work, practice, and a concentrated study of batting for that player to acquire the successful average.

When a player is attracted to a style of batting similar to his, he should concentrate on the parts of that style performed best by that individual. These parts may play a major role in his batting success. These may be the phases of the style the young player could and should do well, but does not do well.

The type of bat that is used should be studied and related to the batting style. When Nellie Fox, Chicago White Sox second baseman, joined that club, he used a thin-handled bat which is most often used by long ball hitters. Doc Cramer, one of the team's coaches, suggested a thick-handled bat since Fox is a line drive *choke grip* type of hitter. The adoption of this type of bat fitted Nellie's natural style and improved his batting average almost immediately.

A young player should consider how basically and fundamentally sound his style is. Is it a peculiar style? Is it an unusual style? These questions form a basis for judgment in evaluating what to add or to detract from his own batting style.

Mental Factors in Batting Styles

The batting style must fit the thinking pattern of the batter. It must fit his mental casing so he will have a harmonious batting operation. The batter must believe in and think with the type of style being used. He must think right and bat right; he must have sound thoughts and ideas concerning batting. These should be backed up by sound experience, reasoning, and advice.

The thinking pattern should be positive rather than negative. It should exude confidence and not skepticism, and should reflect potential success. It should also consider the fact that this batting style has been used successfully before by others. However, it should not preclude the possibilities of change toward improvement. The thinking pattern should embody an eagerness to turn a good batting style into something better. It should stimulate a player's ambition to become a great hitter. It should be open to self-criticism and self-improvement.

However, a certain amount of suspicion is necessary — suspicion against forces that often create complacency, self-satisfaction, and stubbornness. This suspicion should be alert and tempered by a readiness to change one's thinking and batting style when failure takes hold due to poor batting habits. It should be a watchful anticipation against unnoticed change which may result in a batting slump. It should be a readiness to offset anything that interferes, even temporarily, with batting success.

A player's batting style is often dependent upon his diagnostic ability to solve the pitcher's offerings. The type of pitch (fast ball, curve ball, change-of-pace) must be diagnosed early and quickly while in flight toward the plate. The amount of break on the ball, and the speed of the pitch must also be determined quickly. Batters who have diagnostic speed and accuracy can be successful

free swingers. Furthermore, they can afford to swing harder since their diagnosis of the oncoming pitched ball is usually successful. The slow-thinking diagnostician at the plate takes longer to perform this part of the batting operation and, as a result, has less time to swing the bat. This type of batter should cut down on his grip on the bat and on his swing.

The ability of a player to learn and know his strike zone should influence his batting style. A batter who is unfamiliar with his strike zone should stand wide and *punch* at the ball until he learns where his strike zone is located. In this way he can cut down on swinging strikes by decreasing his body activity. There is greater body activity on the part of the long ball hitter than in the case of the *punch, poke* or *line drive* type of hitter.

Insight into the pitcher's pitching pattern accompanied by anticipation of the type of pitch influences batting style. For example, with a count of two balls and no strikes on the batter, he is more apt to expect a fast ball to be thrown. Many batters, in anticipation of this pitch, change their batting styles slightly in order to swing harder at it than they ordinarily would. This insight and anticipation result from constant study of the thinking patterns of opposing pitchers and catchers in selecting pitches to be thrown to the hitter. It is the result of a vast background of batting experience, and plays a major role in the selection of a batting style. A batter who *thinks with* the opposing pitcher can always swing harder than his teammate who *cannot get with him* in his thinking pattern.

Emotional Factors

From an emotional standpoint, the batting style should be compatible with the individual's nervous temperament. The itchy, edgy, fidgety type of batter usually strikes out often. This type of batter ought to stand at the plate with his legs wide. He should *punch* at the ball. When using the batting style of the free swinger, this type of batter often characterizes the wild swinger because he cannot wait long enough for the ball to be pitched. This type of batter often becomes discouraged and disgusted. He usually likes to work the bat often in his preliminary swings, and takes as many as a dozen such swings while waiting for the pitcher to deliver a pitch. Under these circumstances, it is best for the batter to plant his feet wide and firmly, and to cut down on all body activity except his arms.

The batter who is calm under pressure and is not bothered easily can

afford to take a fuller swing at the ball. This type of batter maintains his nervous poise with a *poker face* and *ice water veins*. He is neither bothered by the ball and strike count, nor by previous failures while at bat. Usually, this type of player is consistent at the plate, and stable in his batting reactions. He can *wait out* the pitcher for a good ball without becoming impatient or disgusted. It has been said that Mickey Mantle's large strike-out total in his initial years in the major leagues was due to a slight impatience while waiting for a good pitch to hit. This emotional factor can only be cured by the individual through intelligent reasoning and applied experience.

Psychological Factors

There are certain psychological factors which influence an individual's batting style. In order to make the most of any batting style, the individual must believe in himself and in that style as most fitting to his natural batting ability. It is well for him to adopt only those items that he firmly believes will help his batting success. Experimentation should be done during practice sessions.

A player cannot cash in on the success of other batters. They used their own maximum natural ability, and made the most of it. He can follow their road to success by adopting some of their methods and techniques which naturally fit into his pattern.

We tend to follow success stories of others, and try to project ourselves into the shoes of these players. A young player should use these success stories for inspirational purposes, and for encouragement to build his own success story.

It is foolish for a young player to take important things for granted and think that using another's successful style will lead to personal success. Success is not found; it is earned.

Crawl Stroke

(Continued from page 16)

coordination, the coach must possess two virtues which are indispensable to him. These two points are stressed by the American Red Cross in their list of qualifications for a swimming instructor; namely, a sense of rhythm and a photographic eye. A sense of rhythm means that the coach must be able to gauge the rhythm the swimmer is using between his arms and legs and determine whether or not the timing is correct. Having a photographic eye simply means the ability to see a fault, analyze it, and determine what steps must be taken to correct it.

It is possible, but not probable, that the swimmer will fall into a well-coordinated stroke at the outset. However, through the use of the drills involving kicking and breathing, and the arm stroke with breathing, we hope these movements will carry over well enough to give the swimmer a distinct advantage. If he has been successful and conscientious in his earlier drills, the coordination should not feel too foreign to him during the initial phase of learning.

We like to have our swimmers practice the complete stroke by swimming the width of the pool without breathing. Here, using an ambiguous term, we ask them to *feel* whether or not their timing is correct, *not* by counting the leg kicks but by substituting a mental reminder that the hand should be hitting the water on the number one count of the legs. Here the value and importance of the kicking and tapping drills on the kick board are realized. The point at which the swimmer's head should turn has been established and he knows when his

hand should be striking the water.

When the swimmer feels that his timing is correct and it has been checked by the coach, he should immediately attempt to add the breathing. At this point he will be performing the complete stroke and a sense of rhythm will be of the utmost benefit to both the swimmer and coach. If the swimmer has difficulty in maintaining his coordination, he should be encouraged to breathe on every fourth stroke in order to enable him to get his coordination underway with as few distractions as possible. The addition of breathing always seems to hinder proper coordination at the beginning of the learning process and if a great deal of difficulty is obvious we would recommend that the coach fall back on the basic drills to help the swimmer establish a more correct timing.

Many hours of practice are necessary in order to achieve a well-coordinated stroke. Two factors are important and should be mentioned before the conclusion of this discussion on crawl swimming. The first is that the swimmer should coordinate his crawl swimming by having his arm stroke fall into the rhythm of the leg kick. When the push is made from the side of the pool, the first action should be that of the leg kick rather than the arm stroke. We often find inexperienced swimmers pushing from the side of the pool, and in their haste to begin the crawl movements immediately start to pull with their arms in order to gain the surface. The result is that the swimmer will employ an erratic type of kick to fall into the rhythm of the arm stroke rather than a smooth, easy relaxed kick which will be needed to coordinate the entire movement. When this occurs, it is possible that the coordination may never be right and the swimmer is forging ahead trying to have his legs catch up with the rhythm of the stroke. Of course, the swimmer will tire more quickly since he is expending his energy at a very rapid pace.

An important point which must be stressed from the outset is that as soon as the power from the push-off begins to diminish, the leg kick should be started immediately in order to continue the forward progress. Then the arm pull is used to bring the swimmer to the surface so that he can start the coordinated stroke in an easy relaxed manner. When the legs have set the rhythm for the arms, the coordination is accomplished more easily.

The last point we would like to mention is one which is known to all teachers and coaches. Unfortunately, many students are in a constant rush

and persist in trying to attempt in too rapid a manner the various skills being taught. Whether it is kicking, arm stroke or coordination that the swimmer is working on, he should be executing the movements slowly and deliberately until they are well incorporated into his particular style. The old saying, *Haste makes waste,* is very true if we apply it to swimming skills, for hurried movements are inevitably incorrectly executed and they expend the most energy.

One of the major keynotes to successful swimming is the ability to keep the movements relaxed and easy by using only as much energy as is required. It must be impressed upon the swimmer that he has plenty of time and ample opportunity to try out his new skills. The swimmer should learn all of the movements easily at the outset so that later they become established in a correct pattern.

Teaching the crawl stroke may be accomplished by following a certain definite pattern of presentation. The flutter kick is taught first, emphasizing the importance of body position in the water and using drills whereby the swimmer learns and practices the basic fundamental actions of the kick. Next, the swimmer should be taught to coordinate breathing and leg action alone. Proper use of the kick board will facilitate drills used to teach this skill.

Then the swimmer should be taught the five basic movements which make up the arm stroke of the crawl. Drills on land and then in shallow water without the use of leg action or breathing should be used in learning this skill. From this point the swimmer moves on to the arm stroke, plus breathing, turning his head on every fourth stroke, and then progressing to breathing on every complete revolution of the arms. Care should be taken to see that the swimmer maintains an even pull with both arms and his body remains on a level plane in the water.

The last step should be combining the various skills learned thus far into the completely coordinated stroke. Fitting the arm stroke into the rhythm of the kick and insisting upon the execution of the various skills in an easy relaxed manner should help the swimmer learn the proper method of crawl swimming.

Starting

(Continued from page 12)

gained. The straightening is gradual and makes for a quick, fluid pick-up through the early strides. Many races are won and lost right here, and a sound body angle is of great importance if the center of gravity is to be kept over the driving of the sprinter's knees. The momentum gained early in throwing the weight forward should be hoarded as long as possible without causing loss of balance. At 30 to 40 yards the full stride is gained, although some of the initial exaggeration of arm action and some body lean is retained.

The start is a smooth, controlled movement throughout. It is not done in separate phases as we have described. This is only a convenient teaching method. Mastery of the few fundamentals mentioned will help the coach in teaching the technique to his athletes.

Remember, controlled relaxation is the way to better and faster starts.

Forehand Drive

(Continued from page 28)

overdone, it is dynamite. Also, we should not minimize White's theory of relaxation. It is important to achieve a firm relaxation in playing the game of tennis.

To our way of thinking, footwork means a balanced base from which to hit and we believe a player must be able to hit in any position. We advocate the skip steps suggested by Budge and Jacobs, but prefer the racket going back and the player's shoulders and trunk turning on the way out. Then his right foot is always an index of how far his body will be from the ball. His left foot does not come across his right as he skips out, but comes up to it and his right foot comes straight into the shot, making contact with the ground before contact is made with the ball. When using this method, a player has the urge to go forward as Mr. White suggests, and will put his weight straight into the shot and not across it as is done so often when the left foot crosses over the right. Of course, on wide balls the player must run and we advocate hitting as often as possible off the right foot with the left foot never coming into the shot at all.

We have tried to steer a middle-of-the-road course and that is the only approach we feel is possible in this case. Going too far out on a limb on any theory can be dangerous for an individual. We always return to adapting the game to the individual. A flexible, supple person may be able to rotate satisfactorily with his left foot placed across his right. If a coach has a player who is not getting a satisfactory pivot because of the opposite type of physique, he should experiment a bit with Harwood White's theory. We are great believers in experimentation.

Finally, soundness comes from the racket being on the ball as long as possible, and going out on the ball as far as possible. The player should set a point where he is going to hit a waist-high ball, say the intersection of the right sideline and the baseline. Then he should start his footwork with his left foot in front and across his right at a 45 degree angle, and from on a line with the ball to two inches behind it. In order to make this imaginary hit, he swings in and checks when the racket starts to come across the intended line of flight. Now, he should place his right foot the correct distance from the ball, on

a line with it, and let his left foot remain a little behind it. Then he should rotate back, swing in, and just after he has contacted the ball, let his left foot come in toward the net. The player should notice how long he goes out on the ball, generally two or three feet longer than the other way. This point may provide food for thought and, incidentally, it is a good way for a player to come into the net on the forehand side.

Backswing

Ellsworth Vines — The backswing may be either circular or flat. When the shot is fast, it is flat. The player's left arm should be extended outward for balance.

Bill Tilden — As the ball approaches, the player should drop the racket head down and back behind his body. On all balls, no matter how high or low the point of contact with the ball may be, the head of the racket must be dropped below the line of the player's shot.

Helen Jacobs — Just before the ball bounces into his court, the player should start his backswing. He should draw back until his arm, shoulder, and the racket are approximately on a line. His wrist is bent back comfortably; his elbow is slightly bent; and the racket head is just above the level of his wrist. At the end of the backswing there should be no hesitation, and a slight loop is advisable.

Don Budge — The purpose of the backswing is to get up momentum for the forward swing, as well as to bring the racket head in line with the ball. Sometimes the element of surprise is lost in a long backswing. We are partial to the long backswing because of greater security in control, but believe there are times for both according to the circumstances. The racket should be started back with a slight upward motion, instead of straight back, and it should be straightened out at the maximum length of the backswing .

Jack Kramer — The player should move the racket back in a semicircle, keeping the rhythm continuous. At the end of the backswing, his forearm is parallel with the ground and his elbow will be bent slightly. He holds the racket open face to insure proper flight of the ball once it is hit. By open face, we mean that the flat surface of the racket is perpendicular to the ground.

Lloyd Budge — The racket goes straight back to a point where its head is bent around the player's body. A lift at the end of the backswing keeps the racket in motion and helps the rhythm of the stroke. During the backswing the player's wrist should bend back loosely.

Mary K. Browne — The player should fling the racket straight back with some force to the limit of the backswing. The face of the racket is flat. On high bounds the racket is higher than the player's wrist, but lower than the ball.

Tom Stowe — From a playing position, a player should turn his shoulders sideways, and slide his elbow back slightly. The head of the racket is held up on the backswing so that the player's wrist will be in a natural position. At the farthest point back on the backswing, his hand and the racket should be at least straight behind him, and the head of the racket should be as high as his head. A slight amount of wrist movement is used at the end of the backswing; very little or no wrist movement should be used by beginners.

The most controversial point in the backswing has always been circular versus straight back. Our panel lines up evenly on this—Vines, Don Budge, and Kramer suggesting circular; Lloyd Budge, Browne, and Stowe recommending straight back. Jacobs does not bring it up and Tilden says the racket should be dropped down.

Actually, the backswing fits into the style category more readily than it does into the fundamental classification. We favor the circular because it is more rhythmic and adapts itself to a continuous swing more readily, but we tend to teach beginners to go straight back. Vines is certainly sound in using both. Straight back can be helpful on the return of a serve. We also like to have the racket started back a bit earlier than they suggest, when the opponent hits the ball. This movement starts preparation for the stroke at the earliest possible time. The racket goes back very slowly if it is a slow ball, faster if it is a fast one.

We like Budge's views on the length of the backswing. Certainly its length will vary with circumstances, and we can go all the way with Tom Stowe on *very little or no wrist for beginners.* As much, or more, can go wrong in the wrist than in any other part of a player's body, so we are in favor of cutting down on wrist action as much as possible. However, there is nothing wrong with using the wrist correctly. Generally speaking, better results will be obtained if the player's elbow is bent slightly at the end of the backswing.

We would like to point out that Kramer is guilty of a confusion of terms when he defines open face as the flat surface of the racket perpen-

dicular to the ground. This is a flat face. Open face is when the top edge tilts backward, opening the face to the sky. Of course, closed face is when the top edge tilts forward. Flat face is usually standard for the racket at the end of the backswing, although the stroke can be worked out with the face open or closed.

Forward Swing

Ellsworth Vines — When executing the forward swing, the player should watch intently in order to hit the ball in the center of the racket. The racket comes in level with the ball.

Bill Tilden — When driving cross-court, the player should lean a shade forward, letting his weight go on his left foot before the ball is struck, and then meet the ball on a line with his left hip. In hitting straight, he should keep his weight evenly divided, and let the ball come back to his belt buckle.

Helen Jacobs—A player should time the forward swing so that the racket meets the ball at arm's length from his body and ahead of his left hip. His arm should be bent slightly. When the racket begins to move forward, the player transfers his weight to his left foot. His wrist straightens out as the racket swings forward. He thrusts forward only when he hits. The line on which the racket is swung forward depends on the height at which the ball is taken. A player brings the racket forward on a line with this point.

Don Budge — In the forward swing, the racket head is brought forward in a straight line at the same height at which the ball is taken. At all times the player's arm should be relaxed, and extended at full length. His wrist, which is bent back slightly on the backswing, straightens out as the racket meets the ball at a point slightly ahead of his left hip.

Jack Kramer — As the player starts to complete his swing, his body goes forward. There should be a 45 degree angle between the frame of the racket and the player's wrist.

Lloyd Budge — The player should swing well out to the side, as far out over his left shoulder as possible. As it comes forward to meet the ball, his wrist should be at maximum rigidity.

Mary K. Browne — As the forward swing starts, the player should grip the racket firmly.

Tom Stowe — In the forward swing the player should come up on the ball.

Now we have another controversial point. Should a player swing in a straight line or come up into the ball slightly? We feel that either line of

thought is sound and find ourselves on the court suggesting that one student match the ball more in his forward swing, and another come up into the ball more, depending on the circumstances. Here again, as in footwork, we think the danger of two extremes is present. Vines represents a school of thought which we think is dangerous—that the whole swing is level. Too much thinking in these terms cuts down the margin of safety over the net and a reasonable spin on the ball. On the other hand, getting under the ball does not mean lifting in the forward swing. If the racket comes up through the ball, it comes straight up; it does not curve upward. If a player will steer a course in between these two, he cannot go far wrong.

The transfer of a player's weight is stated in various ways. We incline a bit toward the weight shift preceding the swing. Another point here is the wrist straightening out (when the wrist is used) as the racket swings forward. The player's hand should not get in at approximately the point of contact and then slap his wrist in.

We do not understand why one of the most important things in the forward swing—the inside-out swing—was omitted. In our opinion, this swing is one of the few musts in the ground strokes. It can be defined in many ways, the racket swinging forward so that the player's elbow goes from relatively close to his body to progressively farther away; the racket swung from inside the ball toward the outside; the racket swinging away from the player's body, etc. This swing is important in getting the racket head to line up behind the ball at the point of contact, which is one of the purposes of the forward swing. There is also no reference to another point—does the racket head speed up as it comes in, reaching its peak at the point of impact or does it swing at the same speed throughout the shot? Research is certainly needed on this point, and we can only state that our preference lies with the latter theory.

Hit

Bill Tilden—In the hit, the racket face should meet the ball on its lower outside surface with a slightly upward and definitely forward motion. The player should let the flat face of the racket go directly toward the place he wants the ball to go. He should not turn the racket face over the ball with his wrist or lift up across the ball to impart topspin. The fact that he has hit slightly up will give topspin.

Helen Jacobs—The racket should be vertical to the ground at the moment of impact for a flat drive. In order to strengthen his position, the player should hit against his left leg and left hip. His left leg is almost locked. This position is for control and it prevents the player's body from turning too far to the left. At the moment he hits the ball, his body is tense.

Don Budge—On a flat drive, the racket is vertical to the ground at the moment of impact. Since almost all balls have some topspin, there is a slight bevel or forward inclination of the upper edge of the racket head as the ball is hit. As contact is made with the ball, the racket takes a slightly upward course.

Jack Kramer—The ball should be hit with the open face of the racket.

Lloyd Budge—The racket should be flat as it meets the ball, and the player's wrist should exert a firm push forward. He should have the feeling he is throwing the racket through the ball. In a small space of time the racket and the ball are together, and the direction is determined. The ball cushions against the racket, and must be knocked off. Lifting after the ball is hit is not the same as lifting when it is hitting. The player should lift more, and turn the racket less. He should hit up and over. The hit should be forward of his left leg.

Mary K. Browne—On high balls, the racket should be up over the ball and the finish should be across the player's body and down. At contact, the face of the racket is pointed toward the ground. The player should move the flat face of the racket on the ball by moving his forearm, shoulder, and body together.

Tom Stowe—At impact, the ball should be opposite the player's belt buckle and his arm should be almost straight.

Let us divide the hit into four sections: 1. The horizontal and vertical position of the racket at the point of contact; 2. Distance at which the ball should be hit; 3. Action of the racket at the point of contact; 4. Direction.

1. The horizontal position of the racket is not mentioned. Of course, it should be perpendicular to the intended line of flight of the ball. This will vary somewhat, depending on the angle at which the ball comes and the direction the player intends.

Regarding the vertical position, the most preferred is flat, but Budge is sound in what he says about a slight forward bevel for topspin, although a flat racket hitting up into the ball will also suffice for topspin. It is our opinion that the face of the racket can vary, depending on the height of the

ball – open for low ones, flat for waist high, closed (or beveled) for high. Again, all of this depends on how the coach is working out the stroke for his student. All of these possibilities must be taken into consideration.

2. We would not follow Vines' theory that a player's arms should be fully extended at the point of hit. In actual play, the ball is probably hit closer than is generally realized. Comfortable arm's length is probably the safest, suggesting as it does a slight bend in the elbow.

3. Again we have variances all the way from Lloyd Budge's *up and over* to Kramer's *dropping the head of the racket for topspin.* We would not use the latter. The best index of the racket flat through or the top edge turning over, is what is most natural for the student. Personally, we like to see the top edge come over to *seal the flight of the ball,* but it is not necessary. It is wise for a player to cut down on any conscious turning of his hand. There must be a forward motion of the racket here and we like the expression *thrust* to get it across. Care must be taken that thrust does not become push. We feel that Mary K. Browne's theory, *moving forearm, shoulder, and body all together,* is good. However, there should be a feeling of the player's hand and the racket going through the ball together.

4. It will be noticed that conflict exists regarding how to get direction. We see nothing wrong about talking direction in terms of Lloyd Budge's footwork or Tilden's point of contact, but feel that one more point should be added – direction of the swing. The soundest way to talk direction is probably the point of contact – late for down the line, early for cross-court. The cross-court stroke should probably be hit more from outside of the ball and slightly more underneath it.

Follow-Through

Ellsworth Vines – In this stroke the racket follows through on the same general level. The player's shoulders turn for power and his right foot acts as a brake. He should play the entire shot on the same level. The force of the stroke pulls the racket head up slightly. However, the racket should not come up too high or finish way around the player's body.

Bill Tilden – In the follow-through, the player should continue to the end of a full arm swing.

Helen Jacobs – This movement gives control. Immediately after the racket has hit the ball, it begins its slightly upward movement. The play-

er's body still pivots to the left. Before continuing on to cross his body, the racket and the player's arm follow the direction the ball has taken. The racket ends above and to the left of the player's left shoulder. When following balls hit just over the net, the player should follow-through just to the left of the line of the ball.

Don Budge — In starting the follow-through, the player should bring the racket and his arm in line with the direction of the ball. Then the racket goes across his body in an upward movement which ends with the racket head above and wide of his left shoulder. He finishes the stroke with the racket face half way between the vertical and the horizontal.

Jack Kramer — One way to get topspin on the ball is for the player to drop the head of the racket as he follows through. He completes the racket swing by bringing the racket on around and raising it up slightly to put spin on the ball. As soon as the ball is hit, the racket comes up for the follow-through.

Mary K. Browne — As far as possible, the follow-through should be in line with the intended flight of the ball. At the end the racket turns over easily. The follow-through should be long. Then the player's weight goes forward as though he intended to go into the net.

Tom Stowe — At the finish of the stroke, the player's hand should be in front of his left shoulder. The player's shoulders should be almost parallel with the net and the head of his racket should be above his hand.

Here the big difference among our experts is whether or not to end straight or across the body to the left of the left shoulder through a natural break of the elbow. They are agreed that the racket follows the direction of the ball. Actually, there is room for both endings. The straight ending will probably tend to produce a pretty flat ball; the other, more topspin. An ending is often an indication of what has been done at impact. There can be a tendency to end straighter when hitting down the line and across more for cross-court shots. Vines, *right foot acts as a brake*, is good, but is not always followed in teaching the game.

Naturally, the writings of these players and teachers fall into the five sections we have discussed. Our concept of teaching the game is to concentrate on what we call *the hitting area*. It consists of the approach to the ball, the point of contact, and the follow-through. Thus, a good portion of what is commonly called the follow-through is merely an ending.

INDEX TO ADVERTISERS

COACHES READY REFERENCE SERVICE COUPON

As a service to our readers and for their convenience, we list here the advertisers appearing in this issue. Many of the concerns offer free booklets and coaching aids. Simply cut along the perforated rule and mail to: Service Department, ATHLETIC JOURNAL 1719 Howard St., Evanston, Ill.

MARCH, 1957

COMPLETE LINE

MacGregor Co., The, 47, — See advertisement
Rawlings Sporting Goods Co., Cover 2, — ☐ Free catalog
Spalding & Bros., A. G., 3, — ☐ Catalog
Wilson Sporting Goods Co., 19, 41, 53, — See advertisements

SHOES

Mishawaka Rubber & Woolen Mfg. Co., 45, — ☐ Free "Scouting Book"
Riddell, Inc., John T., 27, — ☐ Information "Riddell" football shoes
Spot-Bilt, 5, — ☐ Information "Spot-Bilt" baseball shoes

CLOTHING & LETTERING

Champion Knitwear Co., 39, — ☐ Free 1957 catalog
Hodgman Rubber Co., 55, — ☐ Information nylon warm-up jackets, sideline parkas, and hooded capes
King-O'Shea Sportswear Co., 56, — ☐ Information "King-O'Shea" custom-built athletic equipment
Post Mfg. Co., Inc., 61, — ☐ Free 1957 spring-summer catalog
Sand Knitting Mills Corp., 63, — ☐ Free 1957 catalog

TRAINERS SUPPLIES

Bike Web Co., 30, 31, Cover 3, — ☐ Information "Bike" supporters
Free sample of one of the following: ☐ Analgesic Balm; ☐ Special Analgesic Balm; ☐ Foot and Body Powder; ☐ Skin Toughener; ☐ Athletic Liniment; ☐ Germicide; ☐ Anti-Fungal Spray; ☐ Athletic Ointment; ☐ Tape and Bandage Adherent; ☐ Tape Remover; ☐ Dextrose Tablets; ☐ Salt Tablets; ☐ Aspirin Tablets; ☐ Ammonia Capsules; ☐ Trainers Kit
Denison Orthopaedic Appliance Corp., 67, — ☐ Information "C. D. Denison — Duke Wyre Shoulder Vest"
Featherlax Corp., 62, — ☐ Information "Featherbite" protective mouthpiece
Horn & Bro., Wm. H., 64, — ☐ Information hinged knee braces, anklets, and knee caps
Johnson & Johnson, 21, — ☐ Information "Red Cross" tape
Precision Athletic Goggle Co., 70, — ☐ Free brochure
Protection Equipment Co., 49, — ☐ Information "Polvonite" football pads
Seamless Rubber Co., 13, — Write direct to advertiser
Seron Mfg. Co., 61, — ☐ Information "Glass Gard" eyeglass holder

GYMNASIUM & FIELD EQUIPMENT

Aalco Mfg. Co., 52, — ☐ Free new catalog
American Machine & Metals, 52, — ☐ Full information
Arnett, Richard W., 12, — ☐ Information "Arnett" starting blocks
Athletic Device Co., 48, — ☐ Information. See listing under "Films"
Audio Equipment Co., The, 29, — ☐ Free brochure
Ball & Hale, 54, — ☐ Free literature
Bat-Tee Co., 68, — ☐ Information
Chrystal Co., Inc., Charles B., 46, — ☐ Information "Whitex" marking compound
Cross Fence Co., 51, — ☐ Information
Crowther Rae, 6, — ☐ Illustrated brochures on 7-Man and 2-Man Blocking and Tackling Machines
Dedoes Industries, 60, — ☐ Free literature
Economy Track Equipment Co., 58, — ☐ Information
Fenner-Hamilton Co., 70, — ☐ Free catalog
Harvard Table Tennis Co., 15, — ☐ Free Harvard Tournament Kit
Hussey Mfg. Co., 65, — ☐ Free catalogs
Jayfro Athletic Supply Co., 70, — ☐ Free catalog
K. & P. Athletic Co., The, 57, — ☐ Name of nearest dealer
Maggie Magnetic, Inc., 54, — ☐ Free catalog
Naden Industries, 66, — ☐ Football catalog; ☐ Basketball catalog; ☐ Baseball catalog
National Sports Co., 69, — ☐ Free circular
Nissen Trampoline Co., 25, — ☐ Free 12 lesson plans in Trampolining
Riddell, Inc., John T., 27, — ☐ Information Tubular Face Guards and Safety Suspension Helmets

Seamless Rubber Co., 13, — Write direct to advertiser
Smash, 65, — ☐ Free rules and playing hints
Supreme Markers, 67, — ☐ Information
Travelrain Power Sprinkler Co., 70, — ☐ Free new price circular

LIGHTING EQUIPMENT

Crouse-Hinds Co., 33, — ☐ Free bulletin and complete specifications

RECONDITIONERS

Ivory System, Inc., Cover 4, — ☐ Add name to "Observer" list
Raleigh Athletic Equipment Corp., 23, — ☐ Information on Shoe reconditioning

FLOOR FINISHES

Hillyard Chemical Co., 1, — See coupon in advertisement

BASEBALL EQUIPMENT

Hillerich & Bradsby Co., 43, — ☐ Free new Louisville Slugger Bat catalog
Tober Baseball Mfg. Co., Inc., 50, ☐ Free catalog

RUBBER BALLS

Pennsylvania Athletic Products, 35, 38, — ☐ Free copy "For Your Bulletin Board" insert
Seamless Rubber Co., 13, — Write direct to advertiser
Voit Rubber Corp., 17, — ☐ Information "XB20" basketball

GOLF EQUIPMENT

Hillerich & Bradsby Co., 43, — ☐ Free new Louisville Grand Slam golf catalog

SWIMMING SUPPLIES

American Playground Device Co., 57, — ☐ Free literature
Ocean Pool Supply Co., 69, — ☐ Free catalog D

AWARDS & TROPHIES

Harter, House of, 63, — ☐ Information
Noble & Co., Inc., F. H., 71, — ☐ Information and catalog

TURF PRODUCTS

West Point Products Corp., 59, — ☐ Free booklet "Improving Athletic Fields"

NETS

Linen Thread Co., Inc., 67, — ☐ Information "Gold Medal" nets
Sterling Net & Twine Co., Inc., 69, — ☐ Free literature

FILMS

Athletic Device Co., 48, — ☐ Free film

NEW ITEMS

Ball & Hale, 44, — ☐ Information
Bike Web Co., 44, — ☐ Free sample "Bike Foot and Body Powder"
Economy Track Equipment Co., 44, — ☐ Information
Mishawaka Rubber & Woolen Mfg. Co., 44, — ☐ Information
Wilson Sporting Goods Co., 44, — ☐ Information

BOOKS

(Enclose money where required)

Athletic Enterprises, 69, — ☐ "Organization and Administration of the High School Varsity Club," $1.00
☐ Locker Room Slogans, $1.00
Olson, Carl H., 68, — ☐ Track and Field Score Cards, 90 cents per set
Prentice-Hall, Inc., 66, — ☐ "Championship Basketball," Adolph Rupp, $3.75
Ronald Press Co., The, 42, — ☐ "Baseball Techniques Illustrated," Ethan Allen, $1.95
☐ "Track Techniques Illustrated," Don Canham and Tyler Micoleau, $1.95
☐ "Field Techniques Illustrated," Don Canham and Tyler Micoleau, $1.95
☐ "Tumbling Techniques Illustrated," Ted Burns and Tyler Micoleau, $3.00
School Aid Co., 4, — See advertisement for list of books
Scoremaster Co., 54, — ☐ Information "Scoremaster Scorebooks"
Six-Man Football Magazine, 56, — ☐ Information

Coupon will not be honored unless position is stated.

NAME ..... POSITION .....

SCHOOL .....

STREET ADDRESS OF SCHOOL .....

CITY ..... ZONE ..... STATE .....

NOW—An elastic supporter that stays elastic *(laundering after laundering)*

Only *Bike* Supporters are made with 4T-280® Heat-Resistant Rubber to keep their stretch in the laundry . . . season after season!

***BIKE* SUPPORTER KEEPS ITS FIT** . . . even after repeated launderings . . . drying in the high heat of commercial dryers. Gives perfect support and protection long after other supporters have "washed out."

OLD-STYLE SUPPORTER LOSES ITS FIT after just a few trips through the laundry. Made of ordinary rubber, it won't stand up . . . won't give proper support and protection. Not *Bike*. *Bike* lasts and lasts, and keeps its fit.

Quality Comparison Chart

7 Quality Features	BIKE Supporter	Supporter A	Supporter B
KEEPS ITS STRETCH after laundry drying	YES	NO	NO
LONG-STRETCH ELASTIC to pull on over hips	YES	NO	NO
3-INCH WAISTBAND† for better anchorage	YES	YES	NO
FULL-WAISTBAND STRETCH for gentle support of pouch	YES	NO	NO
FULL-LEGSTRAP STRETCH won't compress pouch	YES	NO	NO
FULL-POUCH STRETCH to eliminate discomfort	YES	NO	NO
COMPLETE LINE of supporters for all athletic needs	YES	NO	NO

†Bike makes the 2¼" waistband All-Nylon supporter. Also, models with wider 6" waistbands for cases where extra back and abdominal support is needed.

Sold only by sporting goods dealers

BIKE®

THE BIKE WEB COMPANY
Division of The Kendall Company

IN SPORTS

There's no substitute for

EXPERIENCE

The same thing holds true in the highly specialized field of reconditioning and rebuilding sports equipment.

Why settle for less than the best when you have protective equipment repaired for your athletes?

IVORY SYSTEM RECONDITIONING . . .

1. Adds longer life to tired sports equipment.
2. Provides the same protection afforded by new equipment.
3. Gives your budget a booster shot.

Join the hundreds of schools and colleges whose experience proves this.

AMERICA'S OLDEST and LARGEST RECONDITIONERS of ATHLETIC EQUIPMENT

The IVORY SYSTEM inc.

PEABODY MASSACHUSETTS

SOLE DISTRIBUTORS OF:

VITA-SAN
Offers positive protection against athlete's foot in shoes and locker room.

DAWHIDE
Longest wearing and toughest lacing material ever made for athletic shoes.